The Builder.

AN

ILLUSTRATED WEEKLY MAGAZINE,

FOR THE

Architect, Engineer, Archæologist, Constructor, & Artist,

CONDUCTED BY

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"Every man's proper mansion-house, and home, being the theater of his hospitality, the seate of selfe-fruition, the comfortablest part of his own life, the noblest of his sonne's inheritance, a kinde of private princedome, nay, to the possessors thereof, an epitome of the whole world, may well deserve, by these attributes, according to the degree of the master, to be decently and delightfully adorned."

"Architecture can want no commendation, where there are noble men, or noble mindes."—SIR HENRY WOTTON.

"Our English word To BUILD is the Anglo-Saxon Bylðan, to confirm, to establish, to make firm and sure and fast, to consolidate, to strengthen; and is applicable to all other things as well as to dwelling-places."—DIVERSIONS OF PURLEY.

"Art shows us man as he can by no other means be made known. Art gives us 'nobler loves and nobler cares,'—furnishing objects by the contemplation of which we are taught and exalted,—and so are ultimately led to seek beauty in its highest form, which is GOODNESS."

VOLUME FOR 1856.

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VOLUME FOR 1856.

IN our last volume, we were led to make some strong observations on the indiscriminate praise which was being lavished on everything French in disparagement of everything English. We are amongst the warmest admirers of the glories of the French capital, and the cleverness in many respects of our brave allies: and we are by no means blind to the defects of honest, stolid John Bull, and the want of improvement in many of his roads. Still justice is justice; and we feel assured that our protest was needed, and, moreover, that it may be usefully repeated.

When we find one of the most popular and admirable of our weekly periodicals setting forth, after eloquent descriptions of the new Rue de Rivoli, the Hôtel du Louvre, and other improvements in its neighbourhood, such nonsense as the following, we need not be surprised at anything in less intelligent organs:—"The architectural and structural achievements of Paris are on a much larger scale than those of our Houses of Parliament, for instance [all Paris against one building!], yet have taken not a *hundredth*—perhaps (for we do not yet see the end of Westminster Palace looming in the distance) not a thousandth part of the time!" It is difficult to guess how the writer could explain his statement, seeing that the first stone of the Westminster Palace was not laid till April, 1840, and that the rapidity with which this enormous pile of buildings has been erected is marvellous. Apart from the question of time, our skilful and tasteful contemporaries on the other side of the water have erected no building which for extent, completeness, and importance, can be named as its parallel: nor, turning to another style of art, can they show any building to compete with St. George's Hall, Liverpool. As respects the time occupied in architectural operations, Paris has wisely never sought to make her public edifices instances of rapid building: all her most important structures have been the growth of years. The extension of the Rue de Rivoli, and the connection of the Louvre and the Tuileries,—commenced under extraordinary circumstances, when it was found desirable, apart from other motives, to provide work for the artizans, to clear away a very revolutionary part of the city, and to facilitate the passage through it, especially about the Hôtel de Ville,—are exceptions; and here, it is unquestionable, an enormous amount of work has been done in a very short time.

Never let it be supposed that we under-rate the devotion of the French to the Beautiful, the means they give the rising generation to become artistical, and the opportunities they afford men of talent to cultivate and exhibit their powers. The Louvre is a wonderful storehouse of art, ranging as an architectural production from Francis I. to Napoleon III. and enshrining the sculpture of the antique time and the painting of the modern world. Pierre Lescot, with Jean Goujon for sculptor, Bernini, the Perraults, Percier, Fontaine, and Visconti are the architects who have worked here.

The ceilings display the works of many of the nation's best painters; while, for the exterior, as well as the interior, the sculptor's aid has been liberally employed. The new works include a whole population of statues, in the production of which a number of sculptors are engaged. Every statue made is submitted before erection to an Examining Committee, whose decision is final. It appears that this step was resorted to in consequence of the carelessness of some of the artists, who, in haste to complete the execution of the commission entrusted to them, had not shown sufficient regard for their own reputation. When we were last in Paris, we heard of the rejection of no fewer than three statues and four groups, showing the care exercised by the committee.

The opportunities afforded to English sculptors are sadly few as compared with those given in France. Throughout the Louvre, let us add, too, honour is paid to art and artists in a wise and grateful spirit, even to the dedication to them of the noblest of the halls.

In one of the rooms are deposited, in a glass case, the implements used in laying the first stone for the completion of the Louvre, on the 25th of July, 1852,—such as the square, the level, and the mallet.

Some of the memorials, by the way, deposited in the *Salles des Empereurs*, less known than the contents of other parts of this wondrous storehouse, are particularly interesting,—the metal throne of Dagobert; the crown of Hunalde, attributed to the eighth century; the sword of Charlemagne, spoilt by the embroidery with which it was ornamented for the coronation of Charles X.; some very early MSS. and books, and one apartment fitted with relics of all sorts, of Napoleon Bonaparte,—portions of his dress worn at particular events when on the throne and in exile. They serve touchingly to illustrate the life of this extraordinary man. However, our object is not to write a "Guide." Great pains are taken with the grounds around the Louvre: the paths are bordered with a thick edging of *trained ivy*,—not often so employed in England. The large use made of trees in Paris materially improves the effect of their buildings. A paper recently published in Paris gives the number of trees planted there, from which we learn that there are on the exterior boulevards, 11,441; interior boulevards, 91,137; quays, 4,706; avenues, 6,872; places, 3,659; streets, 1,864; Champs Elysées and Promenoir de Chaillot, 9,555; Esplanades des Invalides, 2,040; slaughter-houses, 1,510; Grenier de Réserve, 120; Entrepots des Boissons and Marché aux Chevaux, 874; cemeteries, 3,826; and communal schools-1,130. The length of ground occupied by these trees is 78,515 metres (19¾ French leagues). In addition, there are 57,134 trees, of from one to upwards of 100 years of age, in the different public gardens!

The new portion of the Louvre in the Rue de Rivoli, which fronts the Palais Royal, and has been erected from the designs of Visconti, presents an immense amount of carving, rich, but not always satisfactory in design. The existing building, however, provided the key note. Caryatides support a pediment on the third story of the centre: the attic above this is most elaborately sculptured, and terminates with heads and scrolls along the top of the cornice. In our volume for 1854 (Vol. XII. p. 131), a bird's-eye view of the two buildings as proposed to be united, will be found; and in an earlier volume a plan (Vol. X. p. 443). With the former, is given a long historical account of the Louvre and the Tuileries, and of the numerous designs for uniting them, running over a long period of time, which were made by all the leading architects of France,—who certainly seem to have exercised themselves by imagining difficulties where they did not exist. In our present number, p. 7, we give a view of the Renaissance Court of the Louvre, built during the reign of Louis XIV. with its wonderful amount of sculpture, and showing the equestrian statue of François I. which is now about to be erected. We hope this engraving will be taken as an evidence that there will be no falling off in this department of the journal: on the contrary, our efforts will be uniformly directed to its improvement, in this respect as in all others.

ON COLOUR AND ITS USE IN ARCHITECTURAL ART.*

"THERE is no better education for the eye than the study of fine prints—their colour is so fine." Such was the remark made to me by an intelligent collector of engravings some time ago. At the moment it struck me as a most appropriate exemplification of the value of the lower or neutral tones of colour, in all fine combinations. Now, if any one will give himself the trouble to examine with the most ordinary care an etching by Rembrandt, in its ordinary state, and in one of its later stages, when the plate has been weakened by the numerous impressions taken from it, he will find that the chief difference between a really valuable and a comparatively worthless engraving, consists mainly in the fact, that in one case all the various gradations between light and dark, sharp and dull, are given with precision and accuracy, whereas in the inferior and worn-out plate, they are characterized by a dull, heavy uniformity.

Observe that in each case the general arrangement must be the same. The disposition of light and shadow remains unchanged, but it is by those slight indications of character which perfect execution conveys, that we are enabled to judge of the true merit of a print. Even in a matter which is so purely black and white as a line engraving, colour is one of the first things which attract the eye of the artist.

What is the lesson we are to learn from this? I reply, the extreme delicacy of all matters relating to colour. In a former lecture I showed that the primitive colours red, yellow, and blue, were the first to attract the eye. It is, however, as I shall now try to show, upon the neutrals the nice discrimination and tender care with which these latter are distributed, that beauty of colour depends.

Allow me for a few moments on this subject, to call to your notice a work, having the form of a scientific treatise, lately published by a Frenchman, Mons. Chevreul (director, I believe, of the Royal Manufactory of Gobelins Tapestry, at Paris).

He observes:—

1. That a ray of solar light may be divided into seven groups of colour—red, yellow, orange, and green; blue, violet, and indigo. To which is added this most pertinent remark:—It must not be supposed that all the rays comprised in

* The following paper by Sir Walter C. James, bart. was read at the Architectural Museum, Canon-row.

the same group, red, for instance, are identical in colour: on the contrary, they are generally considered as differing among themselves, although we recognise the impression they severally produce as *red*.

One more short extract:—

1. When light is reflected by an opaque white body, if this body be not polished, each point of its surface must be considered as dispersing in every direction through the surrounding space the white light which falls upon it, so that the point becomes visible to an eye placed in the direction of one of these rays.

2. When the body is polished like the surface of a mirror, for instance, one portion of the light is reflected irregularly, as in the preceding case: at the same time another portion is regularly or specularly reflected, giving to the mirror the property of presenting to the eye, properly situated, the image of the body which sends its light to the reflector.

3. Let us observe this:—It is obvious that if we reunited the total quantity of the coloured light absorbed by a coloured body, to the total quantity of coloured light reflected by it, we should produce white light; for it is this relation that two differently coloured lights, taken in given proportions, have of reproducing white light, that we express, by the following terms, coloured lights, complementary to each other, or complementary colours. It is in this sense we say,—

That red is complementary to green, and *vice versâ*;

That orange is complementary to blue, and *vice versâ*;

That greenish yellow is complementary to violet, and *vice versâ*;

That indigo is complementary to orange yellow, and *vice versâ*.

It must not be supposed that a red or yellow body reflects only red or yellow rays besides white light. They each reflect all kinds of coloured rays; only, those rays which lead us to judge the bodies to be red or yellow, being more numerous than the other rays reflected, produce a greater effect. Nevertheless, those other rays have a certain influence in modifying the action of the red and yellow rays upon the organ of sight. (In proportion to their number do we speak of a colour being dull or brilliant.) This, too, will explain the different varieties of hue which may be remarked among red and yellow substances. It is also difficult not to acknowledge that among the differently coloured rays reflected by bodies there is a certain number of them which, being complementary to each other, go to reform white light on reaching the eye.

Hence I apprehend it is that one painting is said to be more luminous than another, viz. because the complementaries are nicely balanced. Thus a larger number of colourless rays are brought to bear on the retina. Thus it is that a cloudy landscape may be thrown into sunshine by a few touches of gay and positive colour in the foreground; and the sombre tints of a Raffaelle or a Rembrandt be illuminated by the skill shown in painting a lace ruff, or the careful handling of the flesh tints upon the countenance.

Let me here risk a remark, though perhaps to some of my audience it may seem hardly within the fair limits of my subject. The value of a truth must ever be in proportion to the degree in which it imparts self-knowledge,—a knowledge of our own moral nature. Creation itself is but a glass or mirror to give us an insight into the attributes of the Creator.

In this respect, the truth I have alluded to respecting colour has some importance. The primitive colours, seldom seen in their purity, and always, when seen, in very minute quantities, may perhaps fairly be compared to those periods of life when we are called upon to perform some great exploit, or make any unusual effort; while the neutral tones, covering, as they do in nature, and as they ought to do in art, the larger spaces, are like the monotony of our every-day life, not brilliant, but useful, well worthy of attention and study, as being the background upon which the fair picture depends,—the foundation on which the superstructure stands.

Next to a careful outline in any work of art, we proceed to the laying in, as it is technically called in painting, or the disposition of the lights and shadows.

Light and shadow hardly belong to the province of colour—hardly to that of form. It stands really midway between both. In one sense it appears to partake of the nature of colour, for it unquestionably admits of those variations of warmth and coldness which impart at least one of its main attractions to the art of colouring. It appears, therefore, appropriate to remark, that whether the study of light and shadow belong to colour or to form, or be allowed, as is perhaps the most philosophical arrangement, to have a province of its own, it is well that it should form the study of all artists and art-workmen, and ought scarcely to be overlooked in any lecture which professes to give an account of neutral colour.

No round object can be faithfully represented without shadows. It is probably on this account that "light and shadow" form a more prominent object in the painter's course of study than in that of the architect or sculptor. While the student of painting is working from the "round," the architect is occupied, perhaps, with a section—the sculptor with his modelling instruments and clay. This is to be lamented. The sculptor and the architect ought, if possible, to be as accomplished draughtsmen as any painter. Sculpture and architecture, each in their own province, are as dependent upon a judicious distribution of light and shadow as painting is. Sculpture and architecture, indeed, admit of the application of colour.

It is seldom, however, in this country and climate, that either statues or buildings can admit of colour being applied to them specially if in the open air. Painting, of course, relies upon colour and bright colour. The former are in most cases reduced to light and shadow, and form, as their only means of attracting attention. Any one, indeed, who has had the good fortune to visit the Vatican by torch-light, will appreciate the importance of light and shadow in sculpture; and as to architecture, who is there that ever gazed upon the majestic outlines of an old cathedral, dark against the setting sun,—or, again, in its very different aspect, coming forth in the brilliancy of reflected light against a dark thunder cloud,—but will admit how variously it is possible to contemplate the same object, when seen in shadow or in light? It was a remark, I fancy, of the great painter Turner, that none could attain great eminence in his own art (landscape painting), who was not an early riser. Surely the early hours of the day are those which have upon the mind the most invigorating effect; but to the artist the hint is invaluable; for then is it that we can best study those grand forms, which, rising above the mist, display beauty of outline veiled in the tenderest colours:—

> "Hues of the rich unfolding morn,
> Which ere the glorious sun be born,
> By some soft touch invisible,
> Around his path are taught to swell."

At no time are the lights and shadows better worthy of our attention. Has any one ever studied at such times, either any lofty cathedral, or scarcely less beautiful temple of the Greeks? Nay, has any even observed his own parish church, or the gable of some ancient cottage? He will then, doubtless, have marked, how sharply and beautifully the sculptured niche, and deep-cut moulding, caught by some wandering ray of sunlight, display themselves; and how they are all the more brilliant on account of the dim veil of obscurity, in which the great features of the building may, haply, be shrouded. The prominent parts of such a building are like the loftiest peaks of some grand mountain form, tipped with golden light, and clear above the clouded base, giving, perhaps, a more stupendous notion of its whole than would have been afforded by the visible and actual.

Nature in such aspects and under such a point of view has an interest greater in kind, though very like that which we attach to an unfinished work of art. Here and there are striking beauties, but many parts of the scene lie hid in that mystery which, while it is full of uncertainty, is fuller still of hope.

And now let me ask is there any principle—or are there more than one—by which we may discover to what all this beauty is due? To put the question in a clearer shape: are the neutral tints of a beautiful scene in nature arranged upon any definite plan or according to any known law?

We venture to think that they are. 1st. It will be found in nature that the masses of light and shadow are unequal in their form, though even and equable in their general tone. 2nd. Although the lights and shadows are even in their tone, that evenness does not imply absolute monotony; far from it. Cold colours and warm are generally mixed up with each other, in the same way as a warm and luminous character is seen to prevail in the mists of the morning. The evenness of tone to which we allude is not attained by absolute oneness or unity in all its parts, but by the counter balance of various colours, and the very slight degree in which each little square inch, or (to speak more in the language of science) each molecule differs from its neighbour. 3rd. As I mentioned in my last lecture, the brightest bits of light, and the darkest of shadow, are always small; they are frequently brilliant in colour as well as highly luminous, and in close juxtaposition. They are thus more striking by force of contrast, and upon them the eye delights to dwell. On this account they are well worthy of any amount of trouble or skill which the artist may expend in their faithful representation.

Such are some of the laws of light and shadow laid down, imperfectly I fear; but I trust, as far as they go, intelligibly. Nothing is more common than to hear a certain jargon or phraseology adopted with regard to these few simple laws, without their being really understood. Breadth of light and shadow, breadth of colour, breadth of effect, are common and forcible expressions. I must doubt whether they are distinctly apprehended by all who use them. They appear to me often applied as if they meant a sort of slap-dash style,—a courageous dealing with matters of high art, quite inconsistent with so-called vulgar attention to matters of detail. This is a great, though common error. In all the arts it is quite possible to treat a subject in the broadest, nay, even in the boldest way, and yet give the most scrupulous attention to finish. Let me add, that boldness and finish, each in their proper sphere, so far from counteracting, have a tendency to draw forth and exhibit their mutual and relative dependence. The discoveries of the telescope, and a knowledge of astronomy, give almost a tenfold value to the truths, equally important and equally interesting, which the microscope unfolds.

Art, then, let us remember, is a unity, and a grand unity. It combines attention to details in every part with a perfect whole. It is really puerile to set up one part of it above another, in the way we often hear of,—to say colour is everything, light and shadow form everything, or to exalt painting above architecture, sculpture above painting, architecture, in its restricted sense, above both. Form, light and shadow, and colour; painting, sculpture, and architecture,—all these go to the formation of one grand idea,—the realisation by material aids of the impressions we derive from the external universe.

Hence the difficulty of speaking of one province of art,—that, for example, which I have chosen,—without diverging into others. Beauty of colour is dependent, as we have seen, not merely on the hues, but actually on the forms which the patches of colour assume, and above all, on the disposition of the neutral masses. How poor, comparatively speaking, would the rainbow be if it did not combine with its hues the magnificent form of the arch.

The most delicate complexion would not conceal or neutralise bad features, while on the other hand, it is readily admitted that good features are improved by a good complexion. The forms of the clouds on a summer evening increase their brilliancy. The same principle holds good in art. We admire the colouring of Titian, but we feel to want something more. When we look at the drawing of Michelangelo we feel we want something more. The light and shade of Rembrandt do not thoroughly satisfy us. Why is this? Because art being a unity, and aiming, therefore, at perfection,

wants more than man can give. He, then, who takes up art in earnest, would do well to remember that she is jealous, and demands the energies of the whole man. Art asks more than we have it in our power to give. Much we may give: all we cannot. Still, art has full right to ask for all. It is her office, like that of every great pursuit, whether science or literature, or any other, to show that our best efforts here are imperfect. The nature which surrounds us, though in most, if not quite in all, respects superior to any imitation that man can produce, partakes of an inherent imperfection. Her noblest works,—the longest lived among the animals; the oak-tree, which lives a thousand years; nay, the so-called everlasting hills, are transitory. Our aim, then, is to look through Nature and beyond her. The office of art, as of everything great or good here, is to remind us of immortality.*

THE POSITION OF THE ORGAN IN CHURCHES.

WE resume our notice of the work of Dr. Rimbault and Mr. Hopkins,† and will treat more especially upon that portion of it which relates to the position of the organ in churches. This part of the subject is of importance to the architect, involving, as it does, several considerations of consequence both acoustical and symmetrical in the designing of ecclesiastical edifices.

The exact period of the introduction of the organ into the service of the church is involved in obscurity, or rendered doubtful by the conflicting testimony of old writers, but it was probably about the third or fourth century of the Christian era. The earliest account of an organ supplied with wind by bellows, but not furnished with keys, is certainly that ascribed to the Emperor Julian, although, as we said before, the description might apply to the bagpipe, when clothed in the lofty imagery of poetry. But the period—the middle of the fourth century—would agree with that ascribed by some authors for the introduction of the real organ. An engraving, from Didron's "Annales Archéologiques," of a sculptured representation of a pneumatic organ on the obelisk at Constantinople, erected by Theodosius, who died A.D. 395, gives weight to the period ascribed. A century later, Cassiodorus, in his commentary on the 156th Psalm, speaks unmistakably of the state of the instrument, where he says, "Organum itaque est quasi turris quædam, diversis fistulis fabricata, quibus *flatu follium* vox copiosissima destinatur," &c.

The Greeks can lay no claim to the origin of the organ, beyond the merest *precognita*, or simplest improvements upon nature's first flute, the whistling reed, moved to music by the zephyrs:—

> "Et zephyris cava per calamorum sibila primum,
> Agresteis docuere cavas inflare cicutas."
> LUCRET. lib. 5.

Their instrumental music was but of two kinds, *αὐλησις και κιθάρισις*. The Romans derived their arts as much from the Etruscans as the Greeks, for every instrument found on Greek works of art is found also on Etruscan. The flute was their instrument most loved, and their flutists the musicians most honoured:—

> "Temporibus veterum tibicinis usus avorum
> Magnus, et in magno semper honore fuit,
> Cantabat fanis, cantabat tibia ludis,
> Cantabat moestis tibia funeribus."—OVID.

Kircher, in his ponderous Latin work upon music, in the chapter, "De Instrumentis Hebræorum," shows two or three engravings of the Jewish organ in different stages of advancement, but without decided dates, copies of which are shown in the doctor's essay. But so much mystery envelopes the ancient Jewish musical instruments in general, that, in regard to the much-disputed psaltery, he says, "Psalterium Davidicum quale fuerit nemo recte adhuc definivit; credunt aliqui, non tam fuisse instrumentum quam certa quædam harmoniæ genera denotare, et vocis sonique modulationem," &c.

In 450, says Julianus, the organ was in common use in the Spanish churches. Other instruments were used still earlier, and we are told that their introduction by St. Ambrose, in the Duomo of Milan, set the fashion, and Justin Martyr, who flourished 150, relates the use of them even then.

In 313, Constantine built several sumptuous churches, and during his reign the Ambrosian Chant was established at Milan. The venerable Bede, who died 735, when minutely describing psalm-singing, singularly does not allude to the organ. According to Mabillon and Muratori, organs became common in Italy, Germany, and England during the tenth century. In the mediæval ages, the instrument was placed on one side of the choir, a position which seems to have been almost universal throughout Europe.

In our former notice of this work, when speaking of the term "pair of organs," we attributed a certain passage, explanatory of the instrument called the "positive," to Dr. Rimbault himself, whereas it should have been marked as a *quotation* only of the ordinary explanation of that term in the musical dictionaries. However, to what we then said we may add, that Nicholls, the historian of Leicestershire, says—"A 'pair of organs' was the term at that time, when there were two kinds of organs used, the one fixed and the other portable, &c." The "portative," then, was the early movable instrument known as the "regal," and the "positive" was the larger organ, known as the "small," or "choir;" afterwards, from its position, corrupted into "chair," which, being appended to the "great" organ in churches, was the probable origin of the term so much discussed.

In Canterbury Cathedral, as restored by Lanfranc, the organ, according to the monk Gervase, was placed above the arch in the south transept; and after the fire of 1174,—"when the whole choir," says Britton, "from the angel steeple to the east end, together with the Chapel of the Virgin, &c. were destroyed,—after the rebuilding of same, the organ was placed upon a large stone corbel, over the arch of St. Michael's Chapel, in same transept." The corbel is shown in the section of Britton, pl. 4, but has since been removed. In the time of Dr. Burney the organ stood on the north side of the choir, between the third and fourth pillars, and at present, as we know, it crowns the magnificent screen at the entrance of the choir.

In the old cathedral of St. Paul, the great organ stood under one of the north pier arches of the choir, above the stalls, with the choir organ in front. It was destroyed in the great fire. The organ of Westminster Abbey, upon which Purcell played, stood on north side of the choir, and was a small instrument, with diapered pipes: it was removed in 1830—the date of the present instrument,—but its destination is a matter of uncertainty.

At York, the organ built by Dallam in 1632, was, by command of Charles I., placed on the "north side of the choir," in order not to impede the view of the church; but in 1690, Archbishop Lamplugh reversed the decision, and removed it to the stone screen. The same monarch gratified his taste by removing the organ of Winchester Cathedral from the screen to the north side of the choir. "At Chester," says Burney, "the small primitive organ is still standing on left side of the choir, though that now used is at the west end." In Durham, the organ was on the north side of the choir; and a cut from Dugdale shows that of Lincoln in the same position, and illustrates at the same time the much discussed "pair of organs."

Our college chapels also followed the general practice of placing the organ at the side of the choir, whether north or south.

As regards parish churches, the common situation for the organ, both before and after the Reformation, was in the chancel: of course there were exceptions to this. In the Oxford "Glossary," we read:—"The large instruments now in use, were not put up in their present conspicuous situation, in the place of the ancient rood-loft, until after the Reformation. On the Continent, they were also introduced in the course of the seventeenth and eighteenth centuries, but were usually placed at the west end of the choir. In this country, prior to the Reformation, the organ was frequently placed on the north side of the choir, or in the north transept." Thus it will be seen, that in England the present usual position of the organ, over the choir screen, does not appear to have been *general* until the Restoration. On the Continent, the large organs are invariably placed in "lofts;" some at the west end, some over the doors, and some against a pier. A particular instance of the latter, is that magnificent one by Silbermann, at Strasburg, where the organist sits suspended in the air, some 40 or 50 feet from the pavement, occasioning, at first sight, rather an unpleasant feeling of insecurity. In using the term "large," we particularize the principal organ, as it is a rare thing to find a church of pretension on the Continent, without its two, three, four, and sometimes even six organs. For instance, the Duomo of Milan, that of Verona, and the Church of Saint John, at Bologna, have each two large organs, one on each side of the choir. Also the Cathedral of Florence, on the north-east and south-east of octagon.

San Antonio, at Padua, has four organs, and St. Mark, at Venice, six—two large and four portable. At Ratisbon, the organ is placed behind the high altar, an arrangement totally unworthy of this magnificent structure; and that of the Frauen Kirche, at Dresden, one of Silbermann's finest, is placed over the communion table. A list of other instances of importance concludes that portion of Dr. Rimbault's prefatory essay. As we before observed, Mr. Hopkins's work is eminently practical and valuable as a manual of organ construction. His chapters upon each leading feature of the fabric, the case, the bellows, the wind-chest, the claviers, the pedals, the pipes, the stops, &c. with all their complex and elaborate constructive subdivisions, are well and particularly described. The portion of the work of more particular interest to architects generally, is comprised in chapters 32 and 33, namely, the situation of the organ and its size.

Some preliminary observations upon acoustical data and theories, are not misplaced in introducing this *vexata questio*. Air suddenly displaced by the expansion or vibration of a body, displaces in its turn the air adjacent to it, which in like manner communicates its disturbance to the atmosphere around it, the effect varying in intensity according to the power of the prime cause, continuing with its duration, and ceasing with its cessation. The effect of continuous waves upon the surface of a smooth lake into which a stone is dropped, well illustrates the effect, with the exception that the disturbance of the lake is horizontal whilst that of air is spherical, or radiating from the disturbing cause in every direction. "Sound then," says the author, "travelling as it does in all directions, it is easy to discover the cause of the excellent musical effect produced by organs occupying a *central* position in a building; as, for instance, the choir screen of a cathedral or other large cruciform church." A staccato chord from a cathedral organ in a central position will be heard retiring to the remotest parts of the building, and ultimately dying away. A continuous sound, on the contrary, dies not away, because fresh sound-waves follow each other until the building is filled,—but when the hand is raised from the keys it recedes and dies away as before. Sound, being more reflexible than light, penetrates into recesses where light would fail to enter, but, like light, loses in intensity what it gains in extent. Thus, a sound that has travelled twice a certain distance will only be heard with a fourth its original strength, the loudness not diminishing inversely as the distance increases, but inversely to the square of that distance. This is the rule for the open air, but in a building the sound is retained, and the reflection causes echo, which, if the original sound still exist, mingles with it,—if it cease, is audible afterwards. The reciprocation of neighbouring bodies augments the sound and forms *resonance*: for instance, a vibrating tuning-fork will, on the handle being placed on the table, acquire an accession of strength; so with a violin, if only the strings vibrated, an insignificant sound would be produced, but, when the body of the instrument is set vibrating, sounds are produced of considerable power. Resonance is, therefore, an essential condition in musical instruments: thus, a wooden floor, and that a

* To be continued.

† The Organ: its History and Construction. London: Cocks and Co.

raised one, beneath an organ, greatly increases its effect and power, the whole of the surrounding woodwork being thrown into strong vibration.

"The most common impediments," says Mr. Hopkins, "to the equal dispersion of the tones of an organ occupying a west gallery, are the lateral galleries. These catch the sound as it spreads, and prevent its descending into and pervading the aisles beneath so effectually as it would otherwise do," therefore their exclusion in modern churches, together with that of high closed pews, &c. are favourable steps towards acoustical excellence. Instances, however, have occurred in which the echo and reverberation were so great as to require the application of artificial absorbents, &c. in the shape of drapery, to remedy the confusing effect.

One more peculiarity of sound may be alluded to—its penetration. Whereas a wall, or other opaque body, will exclude light, it cannot prevent the spread of sound; and the swell of an organ is heard in a subdued form through the thick woodwork that encloses it, when the shutters are perfectly closed.

The most usual position assigned to the organ for the last 300 years has been the west end. In selecting the west end of a church for the situation of the organ, the architects and ecclesiastics doubtless were actuated by the same motives that induce the choice of a similar situation in a concert-room for the erection of the orchestra, namely, that the entire area of the chamber might have the benefit of the whole united body of sound thrown forward without impediment. By choosing the west end, opportunity was afforded of raising the organ on a platform or gallery, above the level of the congregation; thus increasing resonance, and imparting freedom to the tone, and diffusing it in a more even manner among the audience. Had the organ been placed too near the roof, its tone would have been smothered, and its mechanism injured, from the excessive heat of summer, and cold and damp of winter, occasioning some of that long list of technical ills that the organ is heir to. Greater space, too, was afforded at the west end for mechanism and pipe work. One other advantage might be cited; that being *behind* the congregation, the eye might not be induced by its attractions to wander from its proper object of concentration—the altar; at the same time that it might have filled a high position in the church generally, as an architectural embellishment.

One objection there was, however, to the use of the west end for the position of the organ, and that was the blocking out the great west window when it occurred. To obviate this very serious drawback, they hit upon the plan of either dividing the organ into two parts, one on each side the window, or of piercing with a window the organ itself. Dr. Burney, in his musical tour through France and Italy, cites several instances in those countries.

Smith and Harris, on settling in England, followed the continental custom of placing their organs at the west end of churches, not cruciform, whether with a window or not, but in no case built a divided organ. That at New College, Oxford, was probably the first made here; and that at the Church of the Immaculate Conception, Farm-street-mews, one of the most successful. The cathedral organs of Smith and Harris were usually placed upon the choir-screen, and were scarcely larger than those built for parish churches. The contest between Sir Christopher Wren and the Dean and Chapter of St. Paul's Cathedral we related in our former notice: the latter obtained their point, and the example has been uniformly followed in cathedral and other churches to within the last few years. In recent times the west end has been much objected to,—especially where there is a choir, on account of the distance between it and the voices; and in that case the next position in merit is certainly the *side* of the church.

In some instances, where sufficient space could not conveniently be had in the church, an organ-chamber has been built out from the side. An old example of such exists in the Chapel of Christ's College, Cambridge. Tone, in such a case, is much weakened, but a raised hollow flooring, and plenty of space between the top of the organ and the arch, will much obviate the defect, as at the Temple Church and elsewhere. A most unfavourable plan for tone is that of putting the instrument in a recess, the front of the organ being flush with the face of the arch, and completely filling up the opening. Tone, in such case, can only escape through the interstices of the pipes, like water through the fissures of a flood-gate. At St. Mark's, Old Street-road, this arrangement occurs, and the calculation of the organ-builder is, that a *fourth* only of the tone of the instrument finds its way into the body of the church. But a worse arrangement still is that of putting the *organist*, as well as the organ, into a chamber at the side, with the pipes forming a screen between him and his audience, the noise of the instrument being as oppressive in that small space as the bells in a belfry. The frequent custom of placing the organ at the east end of one of the aisles in an organ-chapel on one side of the chancel, is much preferable to the last-noticed arrangement. In such situation, the floor should be of wood, and hollow, and the sound-boards as high as possible.

If the organ be placed in a chancel-chapel, there should be an arch opening into the aisle as well as one towards the chancel. The object of this is to allow the tone of the organ to pass down the aisle as well as across the chancel.

Another, and more rare arrangement, is that of *dividing* the organ, and placing a portion of it on each side of the chancel, where there is room, as at St. Margaret's, Leicester (see Mr. Sparke's pamphlet on "Choirs and Organs," page 19, where this arrangement is illustrated with a wood-cut). "This plan," says Mr. Hopkins, "is in every respect a most excellent one, scarcely, if at all inferior, even in a musical point of view, to that of a divided west-end organ; while, under its working, the organ is accommodated without being sacrificed to other arrangements that are now considered essential in most churches." A list of the advantages obtained by this mode is appended.

As regards cathedral and minster organs.—At the time the alterations in Westminster Abbey were in contemplation, the Rev. Sir W. Cope proposed to erect the organ at the west end, and at the same time to strengthen its tone as much as possible. The choir screen was proposed to be placed at the west end, so to extend across between the first pair of pillars of the nave, with its face to the east, so as to disclose at one view the whole expanse of the minster; an arrangement, musically, as well as architecturally, considered. As subsequently carried out, the choir screen was retained in its former position; the organ was divided into four portions,—the great organ being placed within an arch on the north side of the church, the swell under the corresponding arch, on the south side: the 32 feet pedal pipes, were laid horizontally along the west side of the screen, while the choir organ hung over the east side, in the usual way. Though so much broken up, the tone of the organ tells well; which may partly arise from the two main portions not being too much under the side-arches, but partly projecting from under them. At Ely, the organ, reconstructed under the direction of the architect, is a *hanging one*: the keys are behind, on the aisle side, so that a portion of the instrument is between the organist and singers: the effect is nevertheless good, and the appearance very grand. Mr. Hopkins concludes this important chapter of his work by a recommendation for placing the player at the *side* of the instrument, an arrangement certainly presenting many advantages. The organist could then see his choir and be seen by them, and, if placed over the choir-screen, would see either end of the building by turning his head, and could thus receive communications and be independent of the prompting so requisite in the present system,—besides this great advantage, that the space of the organ loft could be taken into the Great organ-case by moving the front forwards to the back of the Choir organ,—thus admitting the introduction of many large pipes now wanting. The above arrangement is seen in Snetzler's organ, Beverley Minster; which instrument, standing on the choir-screen, has the keys on the north side.

In chapter 31, certain rules for the regulation of size and power of organs, so as to render them proportionate to the size of the church in which they are to be placed, and the congregation whose voices they are meant to sustain, are submitted for consideration. In this the acoustical properties of the building in question have to be considered, in order to calculate the number of stops requisite. This calculation, it is obvious, can be but approximate, owing to the various causes influencing the acoustical effects, and which can never be wholly ascertained until too late; that is, after the organ is erected in position, and proved.

The calculation of Seidel, apportioning the relative numbers of stops and congregation, does not exactly apply to modern English organs, half-stops and couplers not being taken into the account: with these exceptions it is good enough. Various other theoretical points of considerable interest to the constructors of organs, as well as of churches, displaying much ingenuity on the part of the writer, will be found in the work of Mr. Hopkins; which, if it has not occupied him the fifth part of the time employed by Dr. Burney, in his splendid history of music—namely, thirty years to meditate, and twenty to write and print,—must, nevertheless, have cost him much time and great research.

A copious Appendix, containing an account of foreign and native organs, concludes this history of an instrument, whose progress to excellence from trifling beginnings once more recalls the words of Cicero:—

"Omnium rerum principia parvum sunt, sed suis progressionibus usu augentur."

WORKS AT THE ARCHITECTURAL EXHIBITION.*

YOUR enthusiast after "the northern energy," and your lover of Italian grace, each sees but the half of what is just now on the walls of the Suffolk-street Galleries. *We*, happily, are not demanded:—"Under which king, Bezonian? speak or die,"—but, instigated both by public duty, and private feeling and conviction, can essay to gather at every hand. Assuredly, not from one seed, but from many, will the architecture of our day shortly grow to vigorous life. Whoever "narrows his mind" to observations in either direction restrictedly, is, to some extent, retarding what all desire. Nay; could we concede that the architecture of the future would be "Gothic," or could we concede that it would be "Italian," we should say that that architect would be unfitted for the development of his own style who confined his studies solely to *it*. Moreover, be it observed, architectural beauty is not *necessarily* produced by "constructive truth,"—any more than is the former possible with the *neglect* of the latter. Architecture becomes the grand and living art, only whilst it withdraws itself from the easy application of old names, and when it ceases to illustrate old dogmas and old styles. Unity of existing practice to the extent of what becomes style, we have indeed heretofore urged was much to be desired, for the sake of the opinions on art—amongst the public.

Hopeful as the position of the art is, its advancement is retarded by individual prejudice and professional *clique*. These things have a sort of relationship to something scarcely worse,—in short, to ignorance.—We are giving more space to this head than we usually afford to exhibitions; but the object deserves it. Whatever be the inferiority of the display of works,—having regard to talent existing in the profession,—the collection is full of matter of instruction to those who will make a study of it. The failing light of these wintry days, in what is surely the most ill-constructed gallery in London, is one difficulty which we feel in doing justice to the drawings. Some of the most important works we have still to mention.

Amongst the exhibitors of designs for buildings for important public purposes, Mr. E. M. Barry deserves praise for the number of contributions which he sent. Some of his designs are not so favourably circumstanced as they would have been, had the space permitted the whole of the drawings to be shown. No. 4 is an exterior view of Mr. Barry's "Competition Design for the Taunton Assize Courts and Judges' Lodgings,"—No. 471 being the plan of the principal floor, and an interior view of the

* See p. 63, vol. xiii.

Criminal Court. The drawing first mentioned shows a Gothic hall, flanked by the courts, public offices, and judges' lodgings. These portions are in a somewhat later style of architecture, with oriel windows, and chimney-shafts clustered at the angles, the materials being red brick and stone. Are all the chimney-shafts for use in their actual positions? It seems to us that the design has too much of the character of a college or residence, for the main object of the building. The ogee-capped turrets are beautifully designed. The interior of the Criminal Court is less satisfactory, as in the treatment of the apertures for ventilation.

Mr. E. B. Lamb's "Design for the Law Courts, Taunton" (37), deserves attention, though in parts it may be not free from what are eccentricities, rather than beauties of detail. In general arrangement it consists of a colonnade terminated by square blocks of building with coins; the front being further extended by low wings. Few windows are introduced, and these have the peculiar but effective rustic dressings which Mr. Lamb uses in some of his other designs. The whole is crowned by a low dome. The chief innovation is in the treatment of the order, which, generally, is the Italian Ionic. In place of the architrave stones, segmental rusticated arches are used, springing from column to column: the columns themselves are placed on lofty block plinths, with the angles chamfered; and at the lower part of the shaft, the flutes terminate in a peculiar kind of panelling, or elongated honey-comb work. In front of some of the columns are statues on lofty pedestals. The plan of the portico has much merit.

Mr. Barry exhibits several designs for the Oxford University Museum. To a nearly similar plan, there are two designs, one in the Italian style and the other Gothic. The view of the former (31), shows a quadrangular edifice, with structural masses at the angles, where salient Corinthian columns support sedent statues, these portions being terminated by an attic, crowned by vases. The order is continued by pilasters, and in these intermediate parts, the attic is exchanged for a blocking course, and vases of different character. At the principal front of the building, however, there is a colonnade, with a hexastyle portico and pediment projecting from it. It is, perhaps, to be regretted that there are windows at the back of the portico, as such arrangement is always liable to give the impression of discordance between structural utility and decorative appliances: but, nevertheless, the whole design is admirably well managed. The adjuncts of balustrades and steps would contribute to the effect. The Gothic design (32), has also merit. It has oriels, Burgundian arches to the window openings, an open battlement and pinnacles, and a porch divided into three bays. The ground plan and sections of another design, or one having the colonnade without the hexastyle portico, are also shown (382 and 381), as are other drawings of the several designs (404); and No. 498 gives elevations and sections, showing a lofty dome of glass in the centre. The design, which gained the second premium, was shown in the last exhibition of the Royal Academy, as noticed by us at the time.——Messrs. J. W. and W. Papworth's design for the same structure (50), displays an extended group of buildings, with Italian window dressings and pilasters (having chiefly one story of windows, the upper story being lighted from above), joined by intermediate portions of two stories.——Mr. E. Ellis's design (51), has merely an order of three-quarter columns, and a hexastyle portico,—the glass roof of the centre quadrangle appearing. At the angles of the latter, are four lofty turrets, and the angles of the main building are formed by circular projections.——Mr. H. B. Garling's design (95), was one of the six selected in the same competition. It is Gothic, with traceried windows, square headed and pointed, with pinnacles, and open parapet, and high-pitched roofs. The details are marked by care in design and drawing.——The design of Messrs. W. Young and G. Morgan (108) has a low front with arched windows, and an entrance-way of three arches, beneath a pediment, beyond which rises a tower with four semi-domes, and a cupola from the centre.

The successful design for the Birmingham and Midland Institute, recently given in our journal, is not exhibited; but there are several of the other designs. Mr. I'Anson's elevation of his design (81) evinces both high merit and originality. There are four lines of windows; the two upper stories being united under a range of piers and arches. In the plan, we should say, the quadrant-corners continue to the height of two stories only. The basement has two-light windows, with a simple moulding as pediment, in segmental form, and piers with "*bossages*," and rusticated work. The next story has plain windows, and piers with capitals or impost mouldings. These support a string course, of plain members, and a broad *facia* with the names of eminent individuals: and over this is an iron railing between the piers of the arcade. These piers have ornamental capitals, and the spandrils are filled in with ornament in circles. The cornice has a peculiar character, and may be described as cut into a range of arches, over a deep frieze, and has its upper part formed by broad flat members. Throughout the design, the common forms of mouldings seem to have been avoided; and a similar tendency is to be noticed in many other designs which are amongst the best in the exhibition. The ornament is chiefly in minute coloured patterns; and contributes all the more to the success of the general effect, from its being sparingly introduced. Indeed, the design exemplifies the extent to which polychromatic decoration may aid in effect; but beyond which it should rarely travel. Over the centre of the front is an attic-like termination, with a long panel filled with sculpture. It is finished with a railing, and groups of sculpture at the angles. There are three doorways;—that in the centre having a pediment supported by Persian figures on tall pedestals. One slight drawback to the effect of this excellent design, arises from the ascent of the ground at one end, which is allowed to cut off part of the basement. ——Mr. James's design (85) is more commonplace in treatment. The upper part of the quadrant corners is formed as a screen of coupled Corinthian columns, backed by a wall for part of the height. Near the angles are salient columns coupled, supporting a crowd of figures in advance of an attic. The attics are crowned by groups from the chariot-race—with what reference to the object of the building, is not very apparent. The centre of the front displays a plain porch and some ordinary window-dressings; and there is a lofty inclosing-wall to the area, and pedestals with equestrian figures of Wellington and Raglan, and a monument to Watt. Elevations of the same design are in another room (401-402).——Messrs. Lockyer and Martineau exhibit their design in No. 403.

None of the architects connected with the Royal Academy have ventured to contravene an understood regulation against exhibiting elsewhere, except Mr. Smirke. He gives a view of the Carlton Club-house (156).——Professor Cockerell is represented by Mr. Goodchild, in an excellent drawing, notwithstanding its exaggeration (53), of one bay of "The Interior of St. George's Hall, Liverpool."——Mr. I'Anson's design for the proposed ceiling to Merchant Tailors' Hall is shown in No. 78. It is a flat boarded ceiling in panels, with coloured enrichment, and main supporting girders.——The same architect's "Screen," lately placed in one of the entrance corridors of the same hall (103), has a range of arches rising from columns, with much novelty in the enrichments, which partly consist of coloured marbles, arranged in square and circular panels.——Mr. C. J. Richardson, besides an Elizabethan "Design for a Blind School" (148), contributes a "Sketch of a Design for a London Club-house" (256), which we believe was amongst the drawings noticed by us some years since, amongst those sent in competition for the Army and Navy Club; as also Mr. Brakspear's design for that building (369).

THE NEW CONVICT PRISON.—It is stated that the new convict prison in the course of erection at Chatham has already cost about 200,000*l.*; and, it is supposed, will accommodate 1,000 prisoners.

PROVINCIAL NEWS.

Banbury.—At a late meeting of the local Board of Health, it was determined to proceed with the plan for the erection of gas-works to supply the public lamps of this town with gas, according to a plan suggested by Mr. Atkins, of Oxford, engineer. The old gas company, however, whose present charge per lamp is 3*l.* 17s. 6d. were anxious for arbitration; and it is said that an arrangement has since been arrived at, by which the old gas company submits to a reduction of one-sixth of the present high price for lighting the town.

Brighton.—A large and influential meeting of noblemen and gentlemen connected with the county of Sussex was held here on Friday in last week, for the purpose of taking preliminary steps for the establishment in the county of Sussex of a Reformatory School for juvenile criminals. The Duke of Richmond was named president of the institution. The cost of the buildings is not to exceed 800*l.*

Dowlais.—The gas-works scheme at this place is now fairly launched, and will very shortly be carried out.

Manchester.—The new Public Hall in advanced progress in Peter-street is to retain its old name of "Free Trade Hall." The design is most nearly allied to the Venetian form of Italian Cinque-cento architecture. It is composed of two main divisions, both arcaded, and is surmounted by a frieze, decorated with festoons and circular panels (which will probably be carved in relief), and by a cornice with dentils and modillions: above the whole is a balustrade. A contrast results from the comparative plainness of the lower story, together with the broad undecorated angles of the building, and the architectural accessories of the upper arcade. The lower arcade (which will afford shelter for visitors to the hall) is formed by broad piers with moulded bases, and ornamented imposts of ears of corn in the form of a *fleur-de-lis*, from which spring moulded archivolts. There are nine of these arches, extending the length of the front (156 feet). The upper story is formed by coupled attached columns of the Italian order, on pedestals, each pair of columns supporting an entablature. From the pier thus formed, to each adjoining, runs a moulded archivolt and ornamented key-stone, which enclose a semicircular space, to be enriched with allegorical subjects in alto-relievo. Beneath the sculpture a fret is introduced; and the spandril spaces here are also enriched with foliage, musical instruments, and wreaths, each of the latter circumscribing a spot of red granite. Each space between the pairs of columns has a window, with architrave, trusses, and pediment.

Keswick.—A company has been formed to supply the little town of Keswick with pure water from the breast of Skiddaw. A capital of 3,000*l.* in shares at 5*l.* each is to be raised (the greater part was subscribed for at the first meeting), and it is expected that the town will be supplied with this water next summer. Baths and washhouses are to be erected, and it is believed that a good system of sewerage will speedily follow the introduction of the water.

CHURCH-BUILDING NEWS.

Peterborough.—Improvements are still being carried on by the Dean and Chapter of Peterborough. Mr. Thompson's workmen are employed in scraping off the whitewash from the pillars of the apse at the east end of the cathedral, which was lighted with gas on Christmas-day for the first time, under the superintendence of Mr. Skidmore, of Coventry.

Portsea.—The new cemetery for the parish of Portsea was consecrated on Thursday before last, by the Bishop of Winchester. Mr. C. B. Smith was the surveyor; Mr. G. Rake, the architect; and Messrs. Backhurst and White, the builders employed.

Worcester.—A small lancet window in the church of St. Michael's, in this city, has been recently filled in with stained glass to the memory of a late relative of the rector. The subject of the window is a figure of St. John the Evangelist in the centre, with the Agnus Dei above; and below, the emblem of the Saint, an Eagle, with the Saint's name on a scroll; the whole surrounded with a bordering. The

design was furnished by Messrs. Rogers, of this city.

Trowbridge.—The consecration of the new cemetery was solemnised on Thursday before last by the Bishop of Salisbury. The cemetery is situate on the road to Staverton, about half a mile from the old church. It is 10 acres in extent, divided into equal portions by a road, planted with a line of yew and other shrubs to the extremity. There is an entrance-lodge for the warder's residence, built in the Decorated style of Edward I. The chapel on the Dissenters' ground is cruciform, the tower surmounted by a spire springing from an octagonal lantern, resting on a substructure of two stories, with traceried windows, open archways, and central columns. The interior is lighted by four triplet windows. The roof is boarded oak, the floor paved with variegated encaustic tiles. The consecrated chapel altogether differs from the other, although both are of the Early English style. These mortuary chapels, the lodge, and the general plans of the cemetery, were entrusted to Mr. C. E. Davis, of Bath. The contractor was Mr. William Smith, of Trowbridge.

Bristol.—A new church or chapel has been erected in the city gaol, at the expense of the governor, Mr. Gardner, by whose public spirit, it appears, not only has a much needed building been provided, which, with free labour to be paid for, would have cost the city a large sum of money, but additional store accommodation and additional cells for fifteen or sixteen prisoners thus obtained, so as to obviate the contemplated erection of a new wing to the gaol, which, it is said, would probably have cost 5,000*l*. The chapel is oblong, lighted by pointed windows, in the east front and on either side. Fitted up in the ordinary way, it would seat 700 or 800 persons; and arranged as it now is, so as to have a separate distinct box for each prisoner, there are places for about 170 of the latter. At the east end is a gallery and organ-loft. The gallery, which extends the whole width of the chapel, and half way along either side, is for the officers of the prison; while the whole width of the building on the west end is occupied by the stalls, extending tier upon tier, from the floor (one row of boxes overlooking the other), from the centre of the chapel to about midway up the west wall. These boxes, which are each pews for single persons, are so constructed that, while the inmate can see out in front, and be seen by the chaplain, governor, and officers in the gallery, he cannot see or be seen by his neighbour in the next box. The centre of the ceiling is painted and decorated in somewhat of a Romanesque fashion, sloping down on either side in panels, which, as well as a large compartment against the west wall, are left open for any subjects in fresco painting that private or public liberality may be disposed to pay for. The front of the gallery is carved, some coloured glass introduced into the windows, and a good organ has been erected. The chapel will be opened some time in the present month, with a full musical service.——A correspondent of the *Bristol Mirror*, who takes an interest in the completion of St. Mary Redcliff Church, suggests that if the various professions and trades were to do their part in getting up separate subscriptions, with which different or distinct portions or compartments of the requisite works could be accomplished, much progress might be made, and an emulative spirit excited, which would lead to still further endeavours. Being himself a commercial man, he proposes the organization of a society, to be called, "The Commercial Society to aid in the Restoration of St. Mary Redcliff Church." It would be premature, he thinks, to fix a limit to the operation, and, perhaps, too much to think of undertaking the tower; but a part—say, the north transept window, or the south porch, might be aimed at, and either would be desirable. He suggests that the work should be called "The Colston Memorial."

Wolverhampton.—The porch and south aisle and west front of the collegiate church of this town have been so far completed as to enable the contractors, Messrs. G. and F. Higham, to remove the barricading at the western door. A temporary iron railing has been erected, and a temporary door put in. The reason why this part of the restoration has not been completed is, that funds are required to finish it according to the design of the architect, Mr. Ewan Christian, of London. It is proposed to put in new jambs and arch to the doorway of the south porch, and to substitute a new door in the place of the temporary one. The arch will be filled in with tracery in character with the other part of the structure, and with glass. The restoration of the church, up to the present time, comprises,—new parapet and pinnacles to tower, new clerestory and roof over nave, restoration of west front, new oak roof to south aisle, and restoration of stonework to south aisle and porch. The church has been drained throughout. It is proposed not to go further till spring. The only part of the work which now remains to be done is the restoration of the north aisle and south transepts.

Newcastle-upon-Tyne.—Long Benton Church has undergone considerable repairs. The roof has been raised, unsightly pews in the chancel removed, and stalls substituted. Four of the side lancets, as well as the eastern window of the chancel, have been filled with stained glass. The subjects are;—In the centre light of the triplet, the Lifting up of the Brazen Serpent in the Wilderness, surmounted by the Crucifixion, "Type and Antitype," John iii. 14. On the right is a representation of our Lord's Baptism, by John; and, on the left, His Last Supper, emblematic of the two sacraments. The four side windows contain figures of the Four Evangelists, distinguished by their symbols. The artist was Mr. John Hardman, of Birmingham. The space within the altar-rails has been laid with Minton's encaustic tiles.

GEOMETRICAL PROPERTIES OF CONIC SECTIONS.

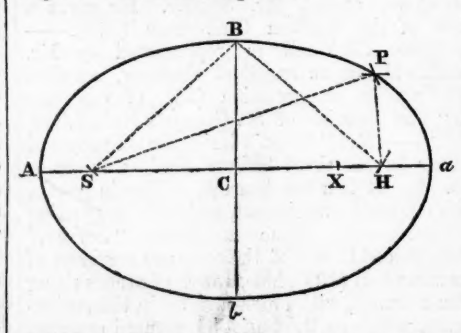
ARTICLE I.—THE ELLIPSE.

IN the following articles it is proposed to examine (without attempting mathematical demonstration) the leading properties of the curves called the conic sections, for the benefit of those who have not acquired sufficient elementary knowledge of mathematics to enable them to study and comprehend the various treatises written upon this subject; referring those who require further demonstration to those numerous works.

The term "conic sections" has been applied to certain important curves, which were originally obtained from a cone having a circular base, by cutting it with planes varying in their directions.

The first and most important of these curves is called the *ellipse*, and is obtained from the cone by a plane passing across it in any way, provided that it cuts completely through the cone from side to side: the outline of this section will then be an *ellipse*.

The following is one of the commonest methods of drawing an ellipse, of which the length and breadth are given:—



Let the lines A *a* and B *b* represent the length and breadth of the ellipse, drawn at right angles to each other: with B as a centre and the half-length C A as a radius, draw arcs cutting the axis A *a* in S and H: then take a string tied at each end to a pin, the length of string between the pins being equal to the length A *a* of the ellipse: fix one pin at S and the other at H: then, by moving a pencil, so as to keep the string always stretched, the curve will be drawn.

This method of drawing the curve shows us one of its important properties, namely, that if P is any point on the curve, *the distance* S P *added to the distance* P H *is always equal to the length* A *a*.

The length, A *a*, is called the *major axis*, and the breadth, B *b*, the *minor axis*: the points S and H are called the *foci*, for reasons hereafter to be explained. The point C, where the *axes* intersect at right angles, is called the *centre* of the ellipse. Any line, as S P or H P, drawn from one *focus*, S or H, to the curve, is called a *radius vector*. By making use of the before-mentioned property, we can find any number of points on the curve, which will enable us to draw in the ellipse by hand, thus:—

Take as a radius the length A X, X being any point between C and H: then with S as a centre, describe an arc of a circle, and with X *a* as radius, and H for a centre, draw another are, cutting the former in P, which will then be a point on the ellipse, since S P + H P = A X + X *a* = A *a*.

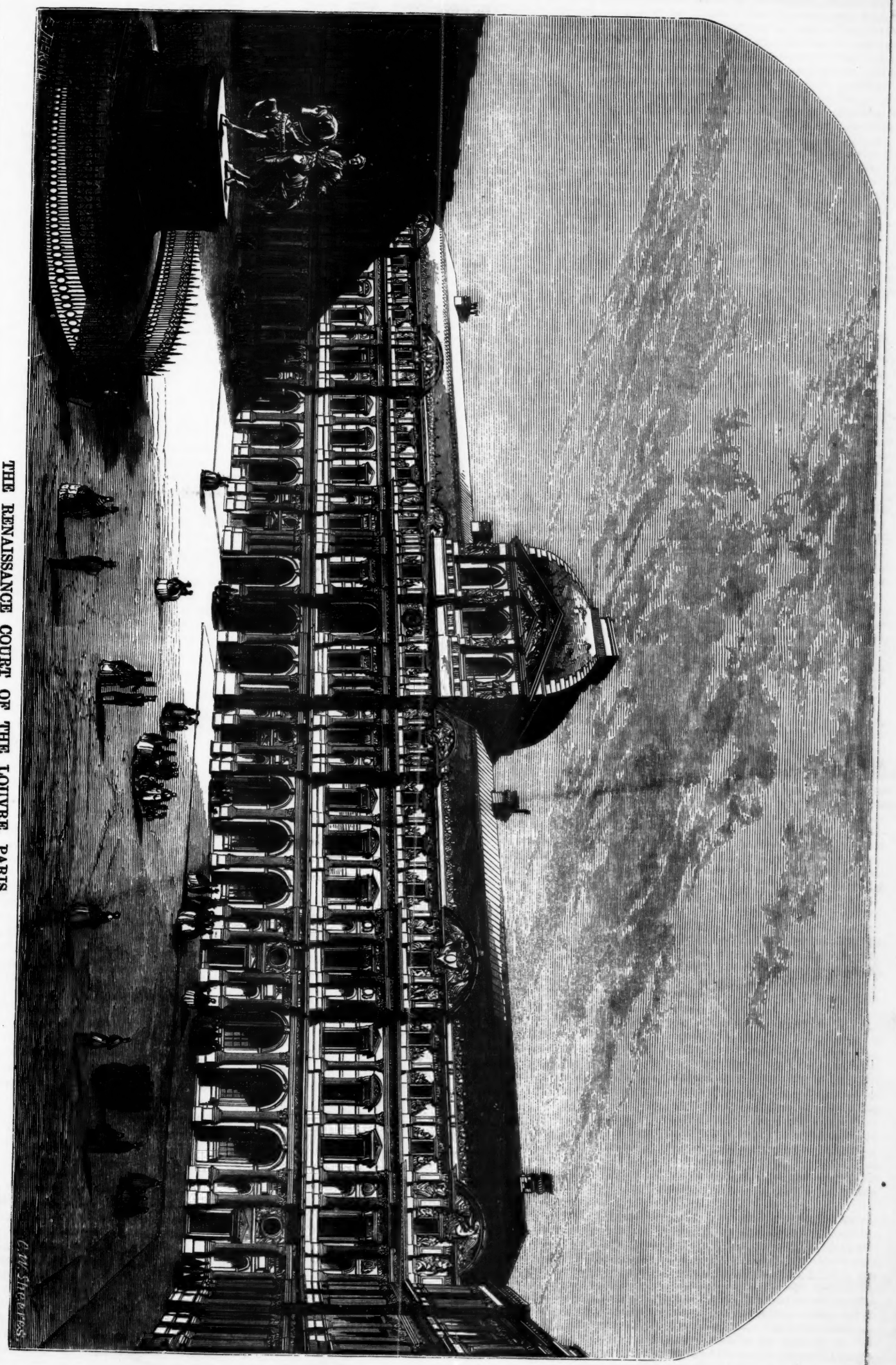
This method is called drawing an ellipse "by points," since the curve is obtained by finding a succession of points in the same manner in which P was found. Two or three points will generally be found sufficient to enable a person tolerably apt with the pencil to sketch in the quarter of an ellipse; and is practically more correct than the former method of continuous motion, which, although theoretically exact, is liable to error, from the stretching of the string and other mechanical causes. There are other means of drawing an ellipse "by points," which will be explained hereafter.

If we examine the figure, we shall see that as we move the point S towards C, the point B will move upwards, since S B is always equal to C A. If, therefore, we suppose S to move quite up to C; then the distance S B becomes the same as C B, or C B becomes equal to C A, in which case the ellipse becomes a circle. Again, as S moves away from C towards A, the curve becomes more flat, or is said to have a greater *eccentricity*. The measure, therefore, of the *eccentricity* of an ellipse is the ratio or proportion of C S: C A, the value of which must always lie between nothing and unity. In the orbit of the earth round the sun, the *focus* S is very near to C, or the ellipse is nearly a circle, the *eccentricity* being very small; whilst in the orbits of the comets, the focus S is very near to A, and the *eccentricity* is nearly equal to unity.

E. W. TARN, M.A.

THAMES ESPLANADE AND RAILWAY.

A COMPANY has just been registered under the title of the "River Thames Esplanade, Railway, and Sewage Company." The promoter, Mr. Wieland, of Glasgow, proposes to construct river walls on both banks of the Thames, extending from London-bridge to Westminster-bridge, with the view of improving the channel and navigation, while increased wharfage accommodation would be given by means of quays and archways extending inwards from the river a depth of 120 feet. On the north side of the river the quay is to be 40 feet wide, and 80 feet in depth from the quay is to be covered by a double row of groined arches, 35 feet span, and about 35 feet in height. It is proposed to raise a road or esplanade on the top of these arches 80 feet wide, running parallel to the river on the level of the various bridges from London-bridge to Hungerford-market. On the river side of the esplanade is to be a parapet and balustrades, and on the land side a row of handsome shops, warehouses, or offices. Underneath would be a series of warehouses communicating with the quays. On the south side of the river it is proposed to adopt the same plan, with the exception that the esplanade would only be 40 feet wide, and on the greater portion of it the warehouses above the shops would give way to private dwellings, built in flats, on the Scotch and Parisian plans. The esplanade on either side of the river is to form junctions with the bridges and leading streets. It is also proposed to form an additional railway under the arches of the railway on the Middlesex side of the river from London-bridge to Hungerford-market. Another feature of the scheme is to prevent the pollution of the river Thames by conveying the sewage from the mouths of the present sewers to convenient spots, where it may be deodorized and converted into manure for agricultural purposes. The importance of the object is admitted on all hands: what is wanted is a practicable mode of effecting it, and this the company will have to show by details. The Thames ought to be embanked, and it will be, we have no doubt: it is simply a question of time and the right man.



THE RENAISSANCE COURT OF THE LOUVRE, PARIS.

[See p. 1 in present number.

A REMNANT OF THE BLACK FRIARS IN THE *TIMES* OFFICE.

IN our last volume we gave illustrations of those parts of the ancient wall of London which then existed, and some historical particulars.* One of these masses was situated beneath the *Times* Printing-office, which stands where the wall was, up to about the time of Edward II. Urgent want of space has led to the removal of the old wall since our notice appeared, and now we have to mention the discovery of a portion of the building which succeeded the more ancient wall.

The Black Friars came to this site (from Holborn) in 1276, Rokesby, mayor of London, having procured it for them. Robert Kilwarby, Archbishop of Canterbury, built the church for them in the early part of the reign of Edward I. In 1282 they obtained license to break down the city wall, and remove it westward, for the enlargement of their church, which was then made very spacious. Fig. 2, on p. 223 of our last volume (XIII.), shows how the position of the wall was altered. After the dissolution of the monastery, the church was pulled down: and here we now have the plinth and foundation of one of the buttresses brought to light, after being buried 300 years; to turn up in such a position, too,—in the midst of the printing-house of the *Times* newspaper. The plinth stands on a mass of ragstone and chalk, 6 feet high. The plinth itself projects from what was the face of the wall, 4 feet 5 inches from east to west; is 2 feet 6½ inches wide, and 2 feet 4 inches high, including a chamfer, 2 inches high, which runs round it. Close to the buttress, on the south side of it, is what would seem to have been the jamb of a doorway. It is interesting to reflect on this remnant of the mediæval church, grown round and pressed out of sight by the most wonderful and momentous result of intelligence, organization, and capital, in the world. The conjunction is a fit subject for a poem.

Want of room will necessitate the removal of the old remnant, and we have thought it right therefore to note its discovery and nature.

THEATRES AND SCENERY.

CHRISTMAS pantomime and extravganza have of course produced much new scenery, and various mechanical devices of the old Lyceum character,—some of the latter, as, for example, the transformation scenes at *Drury-lane* and at *Covent-garden*, very clever, costly, and brilliant. Nevertheless, we are disposed to complain of our scene-painters generally on the present occasion, as not exhibiting any advance, indeed scarcely maintaining their position. Mr. Beverley, at the two theatres already named—excepting the mechanical scenes—has done nothing worth mentioning.

We do not mean to say there is no pretty scenery: the opening scene in "The Maid and the Magpie," at the *Princess's* (a capital pantomime, by the way, full of fun and bustle), is very elegant, and so, too, is the transformation scene. Again, Mr. Callcott's landscape scenery for the introduction to Mr. Buckstone's very good pantomime at the *Haymarket*, "The Butterfly's Ball," is highly meritorious (the insect performers, by the way, are capitally dressed); but, remembering what they do in Paris, we must still urge our artists to advance. We find little solid, honest, first-class painting: and yet we know very well we have men who could do it if they would. We see no such scenes as the "*Fête de L'Ane*," and "The Entry of Charles VII. to Paris," in the piece called "Paris," which has been played for some time at the theatre of the *Porte St. Martin*,—fine pictures, most artist-like, and real. At some of the minor houses the scenery is simply false and disgusting: the managers ought to be prosecuted for injuring the public taste.

Mr. Webster is about to rebuild *The Adelphi* on an enlarged scale, and intends to raise money for this object by debentures. We have not yet seen his Christmas piece, but shall make an opportunity to do so.

At the neat little *Olympic*, pleasantly redecorated, Mr. Planché has provided Mr. Wigan with an extravaganza, called, "The Discreet Princess," wherein Mr. Robson displays great variety and marvellous power. Some of the scenery is very good,—very creditable to Messrs. Gray and Craven; but if we were they, we would set to work and repaint the interior of the round tower in good perspective. The piece, as a dramatic invention, is one of the best Mr. Planché ever wrote, and that is saying much: it is full of point, and will be played 100 years hence.

Queen's Theatre and Opera House, Edinburgh.—This new theatre, built on the site of the Adelphi Theatre, destroyed by fire in 1853, is now completed. It has been designed by Mr. David Bryce. The house will hold 1,800 persons, seated—the stalls and stall-boxes affording accommodation for about 150, the pit for about 350, the boxes for about 300, and the upper boxes and gallery for about 1,000. The first or grand tier of boxes is nearly on a level with the stage. Immediately over these are the second or upper boxes; and above these again, the gallery, with a few seats fitted as boxes on each side of it. The house is lighted, under the dome, by a central light of coloured glass, by Messrs. Ballantine and Allan, and by a number of crystal lustres furnished by Mr. Sim, of Princes'-street. The stage, which is 58 feet long by 62 feet broad, having a width of 32 feet at the proscenium, has been fitted with the newest appliances of stage mechanism. The drop-scene is a view of the royal residence at Balmoral.

The Lyceum Theatre, Sunderland.—This theatre has been burnt to the ground. It appears that workmen had been engaged until a late hour making preparations for the Christmas pantomime, but the origin of the fire has not yet been accounted for.

SURREY COUNTY GAOL, HORSEMONGER-LANE.

IN July last a building committee appointed by the Surrey magistrates in quarter sessions, for the purpose of obtaining plans for the alteration and conversion of Horsemonger-lane gaol from the "associated" to the "separate" system of imprisonment, invited designs in competition from the following three gentlemen,—Mr. Lapidge, the county surveyor; Mr. Hill, the architect of the Wandsworth gaol; and Messrs. Banks and Barry, of Sackville-street, London; on the understanding that the plan approved by the committee was to be carried out on the usual terms by the successful competitor, and that if Quarter Sessions should not confirm the decision of the committee, then that 100*l.* was to be paid to the author of the plan which was declared by the committee to be the best. The committee met early in September to receive these plans. Two sets only were however submitted, by Mr. Lapidge and by Messrs. Banks and Barry. Mr. Hill sent a report, declaring that the present gaol was incapable of conversion, and that nothing would do but to build an entirely new one. Such a proposal the committee were not in a position to consider, and they ultimately came to a resolution, "That the plan by Messrs. Banks and Barry was the better of the two submitted to them, but that they did not feel justified in recommending the court to carry it out, on account of the large difference in expense between that and Mr. Lapidge's plan, and recommended, under the circumstances, that Mr. Lapidge's plan, with such modifications as might be decided on by committee, be ordered to be carried out by the court, at a cost not exceeding 10,000*l.*"

On learning this, Messrs. Banks and Barry addressed the committee, pointing out that they had in their instructions given no limit of cost, nor had even recommended economy, simply specifying their requirements. That, consequently, these requirements, with several others not asked for, were proposed by Messrs. Banks and Barry without stint of cost, and in the most complete way that could be done, and that the committee having allowed this, as also that their plan was more ample and complete than that of Mr. Lapidge, it seemed inconsistent with the promise in the original instructions to resolve that Messrs. Banks and Barry's plan was the best, and yet to recommend the court to adopt one less good, without giving those gentlemen the opportunity of modifying their plan to meet an expenditure then determined on by the committee for the first time. They further expressed their full ability to make reductions sufficient to meet such stipulated outlay, without sacrificing any of the principles of the design which had gained for them the approval of the committee. This letter, with the report of committee, was read in Quarter Sessions, held at Kingston on 16th October, and a unanimous resolution was the consequence, "That the plans be referred back again to the committee for review and reconsideration, with orders to report again."

On the 7th November, the committee again met, and resolved, "That Mr. Lapidge and Messrs. Banks and Barry be informed that the committee wish to have the best plan which can be made of which the cost does not exceed 10,000*l.*; and that the best plan complying with the above conditions, if approved by the committee and the Government inspector, will be recommended to the Quarter Sessions for adoption."

Mr. Lapidge and Messrs. Banks and Barry submitted, therefore, amended plans to the committee on the 11th December, when the committee came to the unanimous resolution that those by the latter architects were again the best; and as they were accompanied not only by the architects' estimate for 10,000*l.* but by a tender from a London builder of eminence for their execution at that sum, that "the plans of Messrs. Banks and Barry be approved." It is expected that these plans will therefore be adopted by the Court of Quarter Sessions, and ordered to be carried into immediate execution, when the evils which have so long been the result of the associated system will be removed from this gaol, as they have already been by so many counties from their respective prisons with encouraging success.

COMPETITIONS.

Hastings Cemetery.—From ten designs of different competitors, one marked "Spes," was chosen; and on opening the enclosure accompanying it, the author was found to be Mr. H. Carpenter, of Hastings, to whom the premium of 10*l.* offered for the best design for laying out the ground, was therefore voted by the Council. On the plan selected, the Episcopal and Dissenters' chapels, with waiting-rooms and vestries attached, will form one block of buildings. The plan also contemplates the construction of catacombs at the end of the principal avenue, surmounted by a terrace consisting of a series of Gothic arches in the Decorated style.

Rugby Town-hall.—Having applied for particulars regarding an intended Town-hall, to be competed for, as per advertisement in your periodical, I am requested to send 2s. 6d. in postage-stamps first. It seems "the Board" are anxious to procure designs from architects, and subscription at the same time to pay expenses for advertisements. I hope the profession will set their faces against such a scheme.

ARCHITECT.

OPENING OF BOLTON NEW MARKET-HALL.

ON Wednesday, 19th ult. the new Market-hall at Bolton was opened, with masonic and other ceremonial.

The plans for a new market-house were advertised for end of the year 1850; for the best design 50*l.* and for the second 30*l.* being offered, the cost of the building not to exceed 17,000*l.* and the area to be 7,500 yards. Twenty-four plans were sent in from architects in different parts of the kingdom; and the markets committee ultimately fixed upon that of Mr. G. T. Robinson, architect, now of Leamington; the second premium being awarded to Mr. Leigh Hall, of Bolton, architect. In May, 1851, Mr. Robinson was appointed architect, with 720*l.* for his services. The first estimate of Mr. Robinson was 18,000*l.* but this was subsequently increased to 26,700*l.* by additions. After this the erection of the Market-hall was contracted for by Mr. W. Tomkinson, of Liverpool; and the construction of the Knowsley-street Viaduct, across the Croal, by Mr. John Evans, of Darwen. The work connected with the Market-hall was commenced on 5th April, 1852.

Early in 1853 a sub-committee reported that the purchase of property for the site and approaches would, with the cost of completing the building, amount to at least 70,000*l.*; part of the property, however, being afterwards available. In April, 1853, and thereafter, it was found that the construction of the foundations of the basement-story arches was defective, some of the arches having fallen; and, after various procedure, the foundations were secured, and the whole of the sixty-six piers rebuilt. The error was attributed to neglect on the part of a clerk of works. After this the work proceeded safely towards completion, although, even still, it is not quite finished.

The building itself is a rectangular parallelogram, 294 feet 5 inches long, by 219 feet 9 inches wide, giving an area of about 7,188 square yards, or nearly 1½ statute acre, and is surrounded by four broad and spacious streets. The four fronts of the building are similar in design and character, though they differ somewhat in detail. That to Knowsley-street consists of a centre portico of the Corinthian order, and is upwards of 50 feet in height. The accommodation afforded by the market will be for upwards of 600 salesmen. The whole of the area is covered by rough plate-glass roofs, of 50 and 25 feet wide, the apex of the main one being nearly 54 feet from the ground.

* See pp. 221 and 269.

floor; and the glass consumed for that purpose weighs 80 tons, and measures 30,000 feet.

The glazing has been done by Mr. Hugh Makinson, of Bolton; the painting by Mr. William Peat; and the gas fittings have been erected by Messrs. Taylor and Galloway. The clerk of works during all but the earlier part of the construction was Mr. Matthew Jepson. The cost of the building, exclusive of the site, is estimated at 45,000*l.* The net income, it is estimated, will be 3,000*l.* a year, besides 1,000*l.* for property to sell or let.

In the construction there were 35,409 cubic yards of excavation; 12,028 cubic yards rubble walling; 13,645 superficial yards brickwork; 6,664 superficial yards flagging; 1,500 superficial yards gallery landings; 59,924 cubic feet of ashlar; 30,000 superficial feet of glass; 823 tons of wrought and cast ironwork.

The whole cost of the improvement, including bridge in Knowsley-street, approaches, paving, property purchased, and market-hall itself, has been estimated at 90,000*l.*

ARCHITECTS' AND ENGINEERS' CHARGES.

A CASE, the general heads of which I give you below, was tried in the Penrith County Court, on the 13th ult. As it may give a caution to some, I have thought it a proper subject for insertion in your widely-circulated paper, which I invariably find protects the profession when in the right, and exposes shabbiness on the part of employers.

Mr. Solomon Atkinson, barrister, in opening the case, said it was an action to recover the sum of 28*l.* 13*s.* owing to Mr. David Browne, engineer, for making drawings for the Penrith Baths and Washhouses. The defendants were Mr. William Bailey and Mr. Thomas Altham, two of the Provisional Committee.

Mr. Bailey, a man much respected in the town of Penrith, had died since the issuing of the summons and the hearing, which was most unfortunate for Mr. Browne, as he could have proved Mr. Bailey present at all the meetings, and thus have saddled the Provisional Committee with all the items of his bill. This he could not do as far as regarded Mr. Altham, who was not present at all the preliminary meetings.

The judge, in the course of the trial, said there could be no doubt that Mr. Browne had been employed to make the plans by somebody, and that the plans ought to be paid for; but as a question of law, Mr. Browne had failed in establishing Mr. Altham as a party throughout. He would therefore recommend that the parties settle it. This was ultimately done; the defendants (or Provisional Committee) paying over to Mr. Browne 25*l.*, which, with 5*l.* previously received on account, made a total of 30*l.*, the whole amount of his bill being 33*l.* 13*s.*, each party paying their own costs.

What I wish to show from the foregoing is this;—that engineers and architects ought to be very careful in taking minutes of all preliminary proceedings. In the first broaching of a project of this kind all is hurry; but when the pay-day comes, any legal quibble is taken advantage of to evade a just payment.

MACHINATOR.

THE CROW'S NEST ON ST. PAUL'S.

A RECENTLY published "History of the Corps of Royal Sappers and Miners" (Longman and Co.) gives the following particulars of the crow's nest erected on St. Paul's, during the ordnance survey of the metropolitan district:—"That above the cross of St. Paul's, from the dexterity with which the construction of the cradle at that dizzy height was pursued, supported only by the architectural ornaments of the structure, excited much curiosity and wonder. The scaffolding was of rough poles: the stage, 10 feet square, formed of planks which supported the observatory, rested on the golden galley on the top of the great cone. The four lower posts, 29 feet long, stood upon short planks, bedded on the stone footway; and the top supported the angles of four horizontal planks, each 23 feet long, bolted together at the angles. From these planks a screen of boards was erected to prevent materials, &c. from falling. The base of the four upper posts, 53 feet long, rested on the angles of the above planks; and the scaffold, in addition to these posts, consisted of four sets of horizontal and four sets of transverse braces, on each of the four sides, the whole being fastened together by spikes and ropes. Fifty-six of the uprights were double poles, placed base and point, and bound together with hoop iron and wedges, and with bolts and hoop iron at the splices. The height from base to floor was 82 feet, and to the extreme top of the observatory, 92 feet. A railing, roughly but securely put up, surrounded the 'crow's nest.' The ascent was by the inside of the tower or lantern to the circular opening, then to the outside of the foot ladders set at the north-east corner, parallel to the north-east principal post inside the scaffold. The whole of the materials were drawn up from the floor by a permanent windlass erected in the tower, to the golden gallery, and then passed to the outside, horizontally, through an aperture 32 inches wide, and finally were drawn up and put into position by purchase erected for the purpose. The whole construction weighed about 5 tons, and though designed by Sergeant James Steel, was erected by Sergeant James Beaton, the most successful builder of these aërial fabrics, assisted by privates Richard Pemble and John Porteous, and some civil labourers, under the direction of Captain Yolland. The time occupied in going up the ladder was about seven minutes, but the descent required only four or five. On the 2nd November, the last piece of scaffolding was removed and carted away. In the hazardous and intricate operation of building and dismantling it, not the slightest accident to human life or limb — not even the breaking of a single pane of glass—occurred.

THE METROPOLITAN BOARD OF WORKS AND THE VESTRIES.

AT the first meeting of the Board under the Act, on Tuesday, the 1st, Mr. Thwaites took his seat as chairman. It was resolved that the temporary charge of the sewers should be confided to Mr. Bazalgette. A committee was appointed to consider and report as to the appointment of officers. Mr. G. S. Hatton, the accountant of the late Sewers' Commission, is a candidate for re-appointment, and on public grounds we hope he will succeed.

Some of the vestries burdened with debt, already find themselves in considerable difficulty: many officers will have to be appointed. In Paddington the committee recommended that the salary of the surveyor be 300*l.* per annum. Mr. Charles Hill thought this insufficient for a proper man, and moved in the vestry, that it be 400*l.*; but the motion was lost by a small majority.

GENERAL MEETING OF THE INSTITUTION OF CIVIL ENGINEERS.

THE general meeting was held on the 18th ult. Mr. James Simpson, president, in the chair. In the report of the council, the Great International Exhibition of Products of Industry, held at Paris, was commented upon at some length; and was admitted to have been in some respects more interesting than that of London in 1851: there were better displays from the colonies: the machinery and wrought metals of the Continent generally, and the agricultural implements and machinery of France in particular, exhibited great progress, and the foreign machines for textile fabrics showed more attention to accuracy of fitting, and considerable advance in mechanical skill. These features were more apparent, in consequence of the inadequate manner in which many important branches of British industry were represented: for instance, there were only two English locomotives among the twenty railway engines exhibited,—fourteen of which, however, bordered on the system introduced by Mr. Crampton. The models of the great works of civil engineering were, with few exceptions, exhibited only by the Ministry of Public Works of France, and by members of the Institution of Civil Engineers, and a well-merited tribute was paid to the excellent and liberal spirit which animated the Fourteenth Class, composed almost entirely of French engineers, by whom the only two Grand Prizes of Honour were recommended to be awarded to Mr. Stephenson and Mr. Rendel, while the decoration of the Legion of Honour had been requested for Mr. Stephenson and Mr. Brunel, and a large number of Prizes of Honour, and of Medals of the First and Second Classes, and Honourable Mention, had been awarded to other Members and Associates of the Institution.

Feeling the importance of the occasion, the Council had not hesitated to deprive the Institution, even for an inconveniently long period, of the services of Mr. Manby, the secretary, in order to his proceeding to Paris to fill the post of vice-president of the Fourteenth Class (Civil Constructions), as soon as it was found that other members, who had been appointed to the jury, could not attend, and the manner in which the duties had been performed was noticed approvingly.

The statement of the receipts and expenditure of the past year showed, that the funds had, at last, reached the point to which it had been the object of the Council to bring them;—that there was an available balance sufficient for the annual publication of a volume containing the minutes of proceedings of the current session, and with any other funds that might be furnished, it was proposed to bring up the arrears of publication. The first part of volume XIV. for the session 1854-55, had been issued, and with it a statement of the subscription to the Publication Fund, in the hope that by thus directing attention to the subject, those members who had not hitherto contributed would be induced to do so.

It was also stated, that in order to facilitate the publication, the president had taken upon himself the entire expenses of the annual *conversazione*.

Notices of Books.

On the Advantages of an Act of Parliament to enable Owners of Settled and Encumbered Estates to borrow Money for their Improvement. By CHAS. F. HUMBERT. London: Piper, Stephenson, and Co.

THE subject of this pamphlet by Mr. Humbert, who is the agent of Lord Essex, is not altogether foreign to the views which have been habitually brought before the public in our pages. The author advocates either a general Act of Parliament, or an extension of certain existing Acts, to enable the owners of settled and encumbered estates to borrow money for their improvement, by the erection of farm-houses, farm-buildings, drainage, road-making, embanking, clearing, warping, irrigating, &c. &c. There are many landowners, having only a life interest in their estates, who cannot afford to lay out capital in the improvement of them, seeing that they could obtain no adequate return for it during their own lifetime; and yet the advantages of capital so laid out would be very great to those who succeed them in the property. It seems that money has been for some years advanced for drainage purposes only through the agency of the Inclosure Commissioners, and that many for other purposes can also be obtained through the various land companies. Mr. Humbert, however, wishes to have an Act passed which would enable landowners, by a very simple machinery, to borrow money for all kinds of improvement, the loan being secured by a rent-charge on the estate, of such an amount that principal and interest would all be extinguished in thirty years. The principle has acted beneficially as far as it has been applied hitherto in the Drainage Act, and in the Health of Towns Act; and it seems it would add much to the prosperity of landed property, and give a great impetus to improvement, if it could be extended in the manner proposed by Mr. Humbert.

VARIORUM.

"THE Business Man's Note-book for the year 1856," edited by Mr. James Hogg, jun. (a descendant of the celebrated "Etterick Shepherd," if we mistake not), has just been published at Edinburgh by Mr. James Hogg, and in London by Messrs. Groombridge and Sons. The aim of this handy volume is to produce at once a Calendar, Diary, and Commercial Directory, specially adapted to the wants of men of business. Much of the routine matter of many other Diaries and Pocket-books has been wisely cast out, and much more valuable matter substituted. The contents are, indeed, as various as useful, and the special convenience of the building trades has not been overlooked. Besides a large quantity of both foreign and national statistics, &c. of importance to business men generally, the volume contains several useful and novel maps, and a metallic calendar fixed inside one of the boards, and which, by its rotary movement, forms a complete ready-reckoner of dates and days of week for many years to come. The same work nearly is issued in a form, and on paper, suitable as "The Desk Directory." Both contain writing-paper, with alphabetical letters, and the weeks and months printed on it for lists and notes.——For the special purposes of education, in country districts where the young may be likely to enter on life in agricultural pursuits, a "Catechism of Practical Agriculture," by Mr. H. Stephens, F.R.S.E. author of "The Book of the Farm," has been published by Messrs. Blackwood, of Edinburgh and London. The idea is an excellent one, and is well carried out. The Catechism is fully illustrated with engravings of various tools, processes, utensils, &c.—more readily described in this way than by mere words,—and on the whole, this little Catechism is destined, we doubt not, to do much good in agricultural education, and it might be

imitated with advantage in other pursuits besides agriculture.——"The Factory Controversy,—a Warning against meddling Legislation," is a vigorous pamphlet by Harriet Martineau, who seems to be renewing her politico-economical youth. We refer to the intellectual energy of the celebrated writer however, and not specially to the merits of the question itself. The author takes up the cudgels on behalf of the factory occupiers, and against those philanthropists who have been exerting themselves to compel these occupiers to fence their machinery for the prevention of those cruel accidents of which one every now and then hears. No one is more capable of taking a cool, disinterested, and enlarged view of such a question than Harriet Martineau, and she does this on general grounds, and not as a mere sworn defender of factory owners. The pamphlet was offered, in shape of an article, to the *Westminster Review*, but the editor "started back" when he read the MS. and refused to publish it. It is now "issued by the National Association of Factory Occupiers" at Manchester.

Miscellanea.

LATEST NEWS FROM ADELAIDE, AUSTRALIA.—By last advices, the colony was busy with elections of representatives, to the exclusion of almost everything else. A little church-building news is all that has been forwarded to us. The first stone of the new church of St. Luke, Whitmore-square, Adelaide, was laid on 11th September last, in due Masonic form, by the Governor-in-Chief of South Australia, Sir R. G. Macdonnell, who is a member of the Freemasonic Order. From 1,500 to 2,000 persons were present, and afterwards a grand banquet was held at the Napoleon Bonaparte, the new entrance-hall and staircase of which were opened on the occasion. At a previous meeting of the church subscribers, it was announced that the iron church sent out was so damaged by salt water, that it had been surveyed and condemned as unfit to be erected. It was therefore to be sold by auction, and the stone church proceeded with forthwith. Two comfortable iron cottages were already up for the parsonage.——The Free Presbyterian Church at Smithfield, Gawler Town, was opened on 26th August. The building is described in the "Adelaide Observer," as a very neat structure, in the early English style. It has four lance-shaped windows on each side, and a triple window at the east end over the door. It is well fitted up with open seats, and is capable of holding about 200 persons. The cost of erection was rather more than 1,400*l.*——The Wesleyan Chapel, at Nairne, was re-opened on 26th August. The new building, 45 feet by 25 feet in the clear, had cost 787*l.* odd. The pulpit and seats are of cedar.

NEW CHURCH IN SMITHFIELD.—It is proposed to build in Smithfield, for the destitute parish of St. Sepulchre Without, a church capable of accommodating 1,000 persons, in memory of the martyrs of 1555-1558.

THE VICTORIA DOCKS. — These newly-opened docks (of which, when in progress, a view was given in our pages) comprise about 100 acres of water. The printed reports of the company give the following comparative estimates, without pretending, however, to extreme accuracy:—Liverpool Docks, about 200 acres of water, cost 6,000,000*l.* or 30,000*l.* per acre; St. Katherine, London, East and West India Docks, about 155 acres of water, including works now in progress, cost about 8,500,000*l.* or 55,000*l.* per acre; Victoria Docks, probable minimum extent 200 acres, with the Steelyard Estate, and intended warehouses thereon, cost 1,200,000*l.* or 6,000*l.* per acre.

PROGRESS OF IRON IN NAVAL ARCHITECTURE.—The relative advantages of iron and wood masts for a ship of 1,000 tons, are stated in the *Birmingham Journal* as follows:—

	Iron Masts.		Wood Masts.
Cost	1·00	—	0·75
Duration	1·00	—	0·25
Strength	1·00	—	0·66
Weight	1·00	—	1·40

Taking cost and duration together, iron masts are about one-third the price of wood, while they are one-third lighter and one-third stronger. This has now been demonstrated, it appears, in the case of the *Aerolite*, built by Mr. Lamport, of Workington, the patentee of iron masts. This vessel was furnished not only with masts but bowsprit of iron. After a voyage to Australia and China, in which she experienced severe weather, her masts and bowsprit were examined, and found to be in as good condition as the day she started.

FILTERED WATER.—From Monday last two provisions in the Metropolis Water Act will take effect. Water is not to be brought within the metropolis in open aqueducts, and every company is effectually to filter all water supplied by them within the metropolis for domestic use, before it passes into the pipes for distribution, excepting water pumped from wells into covered reservoirs or aqueducts, and not afterwards mixed with unfiltered water.

PLACES OF RECREATION FOR THE WORKING CLASSES OF BIRMINGHAM.—A public meeting was held at the Temperance Hall, Ann-street, Birmingham, on Wednesday in week before last, in furtherance of this scheme, the Hon. and Rev. G. M. Yorke presiding, when it was resolved that the recreations be open to young men of eighteen and upwards; that they consist of literary and newspaper reading, lectures, vocal and instrumental music, chess, draughts, bagatelle, backgammon, bowls, quoits, skittles, tennis, singlestick, fives, and gymnastics generally; that no gambling be allowed; that no smoking be permitted, unless in a room for the purpose; that the charge of admission be one penny; that refreshments be provided, but intoxicating liquors excluded. It was ultimately agreed that females be admissible to concerts, &c., by payment made at the door, on occasions sanctioned by the Committee, provided that such entertainment be separate from other recreations. A Managing Committee of fifty members was appointed, including ten working men.

ELECTRIC POWER.—The Emperor of the French, some time ago, offered a prize to him who should discover an electric motive power which should be capable of competing successfully with steam. It is said it may be looked upon as a *fait accompli*, and that M. Dubosc is the fortunate individual whom science and wealth will overwhelm with their honours and gifts. It is said that the model will work, for twenty-four hours, at a cost of thirty centimes, a wheel that is capable of overcoming a resistance of fifty pounds.

PROPERTY SALES AT GLASGOW.—Of five sales of properties to have taken place in the Exchange Sales-rooms, Glasgow, on Wednesday week, two properties only appear to have obtained purchasers, viz.—100 yards ground, 148, 150, Stirling-road, sold at the upset price of 80*l.* Dwelling-house flat, 17, Monteith-row, sold at 465*l.*, being an advance of 15*l.* above the upset price.

THE FOUNTAIN FOR BATH.—A member of the committee states that seven designs were tendered instead of "twenty-eight," five of which were by the *profession* (three of them being from the most eminent architects of this city), and two by amateurs." He further says,—"There were no reasons, on account of ability, for preferring an architect to carry out the erection of the design by the 'cabinet-maker,' but other peculiar reasons which need not be related here." Here the matter may stop at present.

THE IRON TRADE OF THIS AND OTHER COUNTRIES.—In a paper read at the Society of Arts, on 19th ult. by Mr. J. K. Blackwell, F.G.S. it was stated that the annual production of pig-iron in this and other countries appears, from a careful comparison of various authorities, to be at the present period nearly as follows:—

	Tons.
Great Britain	3,000,000
France	750,000
United States of America	750,000
Prussia	360,000
Austria	250,000
Belgium	200,000
Russia	200,000
Sweden	150,000
Various German States	100,000
Other countries	300,000
	6,000,000

About four-fifths of the iron produced is made in nearly equal proportions in the three great districts of South Wales, South Staffordshire, and Scotland. Northumberland and Durham follow next, and then Yorkshire, Derbyshire, Shropshire, North Staffordshire, North Wales, Cumberland, and Gloucestershire, complete the list. The only blast furnaces now existing in which iron is smelted with charcoal are those of the Newland Iron Company, near Ulverstone, and at Lorn, in Argylshire, supplied by the hematites of Ulverstone, and producing about 2,000 tons of iron annually from one furnace in blast in each district. There exist in Ireland immense deposits of clay carbonates, and it becomes a question of vast importance, adds Mr. Blackwell, whether the great resources of vegetable fuel, in the shape of peat, in which that country abounds, might not be advantageously employed in the production of iron of first-rate quality from it.——At the preliminary quarterly meeting of Masters, held on Thursday in last week, at Dudley, no further attempt to raise prices was made, so that the nominal prices of 9*l.* for bars, 10*l.* for hoops, and 11*l.* for sheets, were left unaltered.

DESTRUCTION OF PROPERTY BY BURSTING OF WATER-PIPES. — The late severe frost, followed by sudden thaw, was attended with great damage to property, from the flooding of warehouses and shops, at Manchester, consequent upon the bursting of water-pipes. About fifty warehouses were more or less flooded. In one case at a private dwelling, the breastwork of a chimney, the chimneypiece, and the fire-place were blown down, the contents of the room and the fire that was in the grate scattered in all directions, strong boxes and portmanteaus broken, and a bed set on fire.

WOODHOUSE'S PATENT CROSSING FOR RAILWAYS.—This patent consists, as described, in so constructing the rails of crossings that when one part of the wing rail is injured by wear it may be reversed, to bring another portion of the same rail in the place that had been worn; also in substituting the check rails for the wing rails, and using them in the same way. The ends of the wing rails and check rails are of the same length and bent to the same angle; consequently, the wing rails may be used as check rails, and *vice versâ*. By reversing the positions of the rails when partly worn each wing rail can be used four times, and when they are unfit for use as wing rails they can be put in the places of the check rails, and the check rails may then be used as wing rails, thereby enabling the wing and check rails of a crossing to be employed sixteen times before they are completely worn. The improvements are said to be particularly beneficial when the double-headed rails are used, but useful in all other descriptions of rails. The advantages claimed for this crossing are, simplicity of construction and great saving in maintenance, both as regards labour and materials.

LIFTON-PARK, DEVON.—This property, together with some other farms contiguous, has been purchased through Messrs. Meredith and Co. of Lincoln's-inn, for Mr. Henry Blagrove, who takes possession of the property on Tuesday, the 8th inst. The principal part of the mansion was taken down about Midsummer, 1854, and has since been rebuilt and completed, with considerable additions and repairs to the stables, coach-houses, and offices, under the direction of Mr. R. S. Cornish, architect. Mr. G. H. Julian was clerk of the works, and Messrs. Gill and Ede, of Launceston, were the contractors. In addition to four complete sets of buildings erected and extensive repairs on different farms, a commodious dwelling-house, with complete set of farm buildings, has been erected on each of eleven different farms belonging to this property, by contractors, varying from 1,500*l.* to 2,000*l.* each, under the same architect. Mr. John Laskey and Mr. Edwin Luscombe superintended the various works, which are now completed. In draining and other improvements of the land, considerable sums of money have been expended, under the direction of Mr. Jonathan Kittow.

GAS.—I was glad to find in a recent number, attention again called to the importance of increasing the consumption of gas, and think the suggestions of "Another Englishman" of great value. I would add another, viz. that the builders of new houses should insert the necessary pipes before plastering, &c. as the work could then be better done, and no injury would arise from introducing gas afterwards, as the fittings and meter would merely have to be attached to the pipes. I have no doubt this provision would be appreciated by the tenants. I know of eight houses in which such provision was made by the builder: they all let readily, and seven of them are already supplied with gas, and the eighth doubtless soon will be.—GASLIGHT.

SWING DOORS.—Mr. R. Watson Savage has specified his patent for "Improvements in Single and Double Action Swing Doors." Close to the edge of the door, nearest to its turning point, and secured underneath the same, so as to allow the door to travel on it, says the inventor, I have an incline plane, or wedge-piece, the surface whereof must be such as to compass the course taken by the opening, shutting, or swinging of the door, and which incline plane, or wedge-piece, must be secured in such position underneath the door that the curve might be described thereon, and so that the door on being opened shall press first upon the lower part of the thin end of the inclined plane, or wedge, and then travel to the highest, or thick part thereof. In all cases the door should be provided with rollers to travel over the surface of the incline.

SANITARY REFORM.—As an old subscriber as well as an old sanitary reformer, I trust you will continue your efforts in showing up the old rotten system. The sanitary reformer is as much required in public establishments as in private,—in the villages as well as in cities and towns. Why not every union in the country have an inspector of nuisances? I could name two important towns where I have, with your assistance, helped to upset the old cesspool plan, but not without some little trouble and loss of caste.

L. V.

LIVERPOOL ARCHITECTURAL SOCIETY.—On December 26th, the society held a sessional meeting in the Royal Institution. The secretary read a letter addressed to the president by the operative bricklayers of Liverpool, who complained that at the last meeting the president charged them with uniting for the purpose of opposing the masters, and pointing out that their union was not for any such object, but rather for purposes of a benevolent nature. The chairman, Mr. Hay, said that he never thought of charging the Liverpool operatives with such an object. What he did say was, that the Manchester hodmen had struck, but that he had to congratulate this society that such a state of things did not exist in Liverpool. The secretary read a letter from Mr. Goodman, the secretary to the London Architectural Society, urging upon this society the consideration of the propriety of memorializing the president and council of the Royal Institute of British Architects to organize an examination, or to grant a diploma, so that the real qualifications of the architects should be brought before the public. The chairman said he should be very happy, along with the other members of this society, to memorialize the Institute of British Architects for the purpose of bringing out some scheme that would be satisfactory to all parties. The subject was postponed until the next meeting of the society. Mr. Horner exhibited a small portion of Roman concrete found at the head of Windermere. Mr. Howard then read a paper "On the Application of Colour to Classical Architecture."

WEIGHTMAN AND CO. *v.* LEWIS. — We have received a communication from Mr. T. H. Wyatt, with respect to the part he played in the above matter; but inasmuch as not the slightest imputation was thrown on Mr. Wyatt at the trial, or conveyed in our notice, we do not think it necessary to insert it. The whole blame rests with the committee. Mr. Wyatt acted as any other honourable architect would have acted in his place. In the notice, instead of the plans were "returned," we should have said the plans were *retained*.

LECTURE ON CROMLECHS.—At the Bristol Philosophical Institution, on Monday evening before last, a local antiquary, Mr. G. Pryce, delivered a lecture on "Cromlechs." The lecturer made the stones at Druid's Stoke, near Bristol (which he regarded as Cromlech remains), the groundwork of his observations, and remarked that such structures might be regarded as partaking of the characteristics of an altar, a sepulchre, and a memorial. He also instanced such of these erections as, from their peculiar positions and other circumstances, seemed to render it impossible they could ever have been covered with mounds of earth.

WALSALL SCHOOL OF ART.—A public exhibition of the elementary drawings of the students of this institution was held on Thursday and Friday of last week. A good number of persons attended. On the Thursday evening the master of the school, Mr. Smith, delivered a lecture on "the Utility of Practical Art," the mayor in the chair. The lecture was well attended. Mr. Smith divided his lecture into two parts—the means by which a knowledge of drawing may be obtained, and the results to be derived from its possession. The chairman, after the lecture, presented the rewards. The mayor said he would give a prize next year.

ARCHITECTURAL SOCIETY OF THE ARCHDEACONRY OF NORTHAMPTON.—A committee meeting was held on Monday, December 10. The plans for Winwick Church were re-discussed, and the raising the walls of the nave much deprecated. In conformity with a request from the Northamptonshire Educational Society, a sub-committee was appointed to co-operate with the sub-committee of that society, in respect to the site and plans for the training-school to be established at Peterborough. A sub-committee was also formed to communicate with the London and Diocesan Church Building Societies, on the expediency of giving their grants to new churches with respect to the amount of area rather than to the number of sittings.

BELLS.—In "Seymour's Survey of London," 1735, I find the following peals given. Can you or any of your readers tell what has become of them?—St. James's, Westminster, six; St. Peter le Poor, Broad-street, five; All Hallows, London-wall, five; St. Martin Outwich, five; St. Katharine, four; St. Alphage, six; St. Mary's, Newington-butts, six; St. Thomas's, in the Borough, five. From the same book it appears that most of our present peals of eight were then peals of six: the addition has, I believe, been almost universally made by the increase of trebles, which accounts for the lightness of so many tenors in modern peals of eight. A peal of five has lately been placed in St. Paul's Church, Brighton, with a tenor of 42 cwt. What a contrast to the peal of six iron-sounding bells just hung in St. Luke's Church, Nutford-place, Edgeware-road; tenor, 8½ cwt.!

JOHN H. SPERLING.

BRICK MACHINE-MAKING UNDER DIFFICULTIES.—There is an amusing account of a difficulty as to the formation of bricks in Java under the Dutch Government, in Watson's *East Indian Archipelago*. The official in perplexity on this account was a grandson of Marshal Daendels, a general so savage and destructive, that Napoleon declared, that if he had two Daendels, he must unavoidably hang one of them, not reflecting, doubtless, that even one Daendel might be one too many, and had better be hung. Old Daendel's mode of making a brick-machine would have been to order it to be done, with the proviso, harder than Pharaoh's on the Jews, that if it wern't, the guilty official who failed to do so should be forthwith shot. Daendel's grandson, however, seems to have had neither the will nor the power to act like his great ancestor. He caught a hint of the existence of a scientific American in prison on the island; and having heard that the Americans, somehow, made no end of bricks by "turning a crank," as they made pigs into sausages, Young Daendel got himself introduced to the "scientific American," who really did think he had seen some such article as that indicated, and perhaps he could make one,—he didn't know till he tried, like Paddy, when asked if he played the fiddle. He "could not but try." So he set to work. He knew that the clay went in somehow in the lump, and came out a never-ending series of bricks. Necessity is the mother of invention. The American had great promises made him, and had high hopes, although he feared the bricks, when made, might only go to strengthen the walls of his prison. For a time he strove in vain, but at length it appears, he actually re-invented (if we may say so) a complete and practicable brick-machine, with copper, endless chain of moulds, and every thing complete; and although it was long ere the promises held out to him were fulfilled, the brick-machine did at length good service to the prisoner of Weltevredin.

VALUE OF HOUSE PROPERTY IN LONDON.—The lease, for an unexpired term of seventeen and a half years, at a nominal rent of 1d. a year, free from rates, taxes, or insurance, of a small one-floor warehouse and counting-house, in the rear of 36, King William-street, Upper Thames-street, estimated to produce a rental of 30*l.* per annum, and determinable, at the option of the lessor, at the expiration of the term of fourteen years, was sold by Mr. T. S. Smith, at the Mart, on December 20, for 430*l.*

THE THAMES TUNNEL.—In the week ending 29th December, 25,436 passengers passed through, and paid in tolls 105*l.* 19s. 8d.

NEW TUNNEL ON BIRMINGHAM CANAL NAVIGATIONS.—The turning of the first sod of the proposed Netherton tunnel was effected on Friday in last week, at Oakham, near Dudley. The tunnel is to run under the Rowley-Hills. It is proposed to branch a new canal from the Birmingham level at Dudley Port; its termination being at Windmill-End or Darby Hand. Its length will be two miles and a half, and the length of the tunnel will be 2,567 yards. The dimensions will be sufficiently large to allow of the passage at one time of two boats, one in either direction, and the old practice of "legging" will be obviated by a towing-path on each side. The total cost of the undertaking is estimated at 180,000*l.*

LIGHTING CALCUTTA BY GAS.—We understand that the works of the Oriental Gas Company, in Calcutta, are making good progress, and the loss of materials, occasioned by the wreck of the *Dream*, has been promptly made up by consignments in other vessels.

SHOCKING ACCIDENT AT SMELTING WORKS.—At a pig-iron smelting manufactory, on Monday week, while the furnaces were in full operation, and in one of them were about five tons of fused material, without the slightest previous warning, the red-hot contents of the furnace were ejected about the place to a distance of some thirty yards, with a report as of a small cannon. Four men were fearfully burnt, and shortly after died, and the engineer only saved his life by plunging into a tank of water before his clothes were burnt off him. The accident is said to have arisen from a sudden escape of water into the furnace from the "tweer," a hollow iron vessel by which the blast-pipe is protected from the burning influence of the furnace.

METROPOLITAN CHURCH-BUILDING.—A new and grand church-building effort is announced as having been taken in hand mainly by Lord Robert Grosvenor, as the chief promoter of the subscriptions, which have already made the following splendid commencement:—The Crown, 10,000*l.*; the Duke of Bedford, 10,000*l.*; the Marquis of Westminster, 10,000*l.* It is proposed to realize no less a sum than 500,000*l.* in this way; and in pursuance of the plan it is anticipated that many other large proprietors, such as Lords Portman, Calthorpe, Camden, Radnor, Harewood, Fitzhardinge, Exeter, and almost innumerable wealthy commoners, will follow the munificent example thus set before them.

NEW MURAL MONUMENT IN YORK CATHEDRAL.—A mural monument, of classical design, has been placed in the south aisle of the choir, in memory of the officers and privates of the 51st Foot, who fell at Burmah during the war of 1852-3. The monument consists of a full-length figure of an officer of the regiment. At the feet is laid a full-dress cap of an officer of the 51st. In the background is a representation of a broken column entwined with evergreens, an Indian pagoda and palm-trees, and at the side of the figure is inscribed a motto. At the base of the monument is a tablet recording names. The whole is of Parian marble, executed by Mr. Richardson, of London.

ARMY WORKS CORPS.—On Wednesday 500 artisans, handicraftsmen, and navvies embarked with their officers on board the *Jura* steam transport, in order to proceed at an early hour yesterday direct to the Crimea. They form a portion of Sir Joseph Paxton's Army Works Corps, and have been organized by him as a special body always available for the service of the Commissariat, hitherto very expensively and ineffectually performed by Croats and other labourers hired in the East.

"EXAMPLES OF ANCIENT DOMESTIC ARCHITECTURE."—Under this title Mr. F. T. Dollman is preparing a work, illustrating the hospitals, bede-houses, schools, and alms-houses, of the Middle Ages in England. It is intended to be an accurate record of a class of mediæval buildings fast hastening to decay, remarkable for their beauty, interest, and suitableness. The publication will consist of forty plates, embracing plans, elevations, sections, details, and perspective views of interesting examples remaining, from drawings and measurements taken on the spot, and drawn as nearly as possible to one uniform scale.

THE SUBSTITUTION OF A PATENT HAMMER FOR HAND-LABOUR AT BIRMINGHAM.—In allusion to an advertisement in its columns as to a new patent hammer, the *Birmingham Journal* gives an account of the circumstances under which it was introduced into Birmingham. Soon after the present war commenced, great complaints were made of the backwardness of the Birmingham small-arm makers. The workmen were very unruly, and Mr. Lawrence, one of the advertising firm, acting on a hint from Sir Thomas Hastings, of the Board of Ordnance, that Birmingham was very slow in introducing improvements, or bringing machinery into use in place of hand-labour, visited Bolton and Manchester, to endeavour to find some machine to supersede the necessity of hand-labour in forging bayonets. He found several (Ryder's patent amongst others) that would forge the bayonet out of the rough steel, but not one that would put the grooves or flutings into the bayonet simultaneously. He returned home, and a friend happening to know his want, showed him a notice of the new hammer, then just patented. Mr. Lawrence went to Heeley, and the inventor undertook to make him a hammer that would do the work. The hammer is now working, and Mr. Lawrence has not a single hand-forger on his premises.

LICENSED TO COPY. — The architects of this country are, we perceive by the *Builder*, agitating the question of a diploma, in order that the public may recognise the "regular-bred" men from the interloper. We have noticed the discussion with much interest, but it appears to us the notion arises more from the self-idea of extra-gentility attached to the thing, than from any real call for it from "my masters" the public. If the official stamp is only wanted to the license to copy to which English architecture mostly aspires, then we say withhold it, and let the title of architect be open to all; for certain it is, we have more to thank the general public than the regular-bred architects, for any progressive movements of improvement in architecture during the past century. The servile spirit of copy and the incongruous admixture of styles, are detected and deplored by the public, and any man who departs from this copyism, and really constructs a building fit for the purpose for which it is wanted, and with an external expression in accordance with its use, is sure to receive the best diploma, viz. the public approval.—*Bridgewater Times.*

DIMENSIONS OF PUBLIC ROOMS IN MANCHESTER.—The following are the dimensions of the principal public rooms, &c. in Manchester, and the numbers of persons they will seat: where standing room only is required about twice the number of people may be accommodated:—

Name.	Length. Feet.	Bdth. Feet.	Area in Sqre.yds.	Persons
Royal Exchange	185	92	1,628	3,000
New Free Trade Hall	134	78	1,161	2,360
Assembly Room	75	37	308	500
Theatre Royal	120	55	600	3,000
Corn Exchange	—	—	600	1,200
New Mechanics' Institution	76½	40	349	600
Manchester Town Hall	68½	32½	250	500
Salford Town Hall	—	—	242	500
Hayward's Hotel Room	64	26	184	350
Chorlton Town Hall	50	28	127	250

—*Manchester Courier.*